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LECTURES.

DUODENAL AND GASTRIC ULCERS.

A Clinical Lecture delivered at the Hospital of the University of Pennsylvania.

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I cannot altogether agree with those who think that, as regards the frequency of gastric ulcer, it is much more often suspected when it does not exist, than overlooked when actually present. But all are agreed as to the rarity of duodenal ulcers. Of this latter, it is doubtful if more than 70 authenticated cases are on record; while gastric ulcers, either cicatrized or open, are found in about 5 per cent. of persons dying from all causes. It may be very difficult to decide whether an ulcer which is believed to exist is gastric or duodenal in position. And this fact, coupled with the frequency of these ulcers, their dangerous character, and the great importance of proper treatment, leads me to report to you some recent cases.

It is true that you can diagnose gastric ulcer with confidence in cases attended with characteristic paroxysmal circumscribed epigastric pains extending through the back, coming on after eating, and disappearing only when the stomach is emptied by vomiting; with localized tenderness; with frequent vomiting, hyperacidity of the contents of the stomach, and with recurring hæmorrhages of bright blood in varying amount, with or without bloody discharges from the bowels. But it must be remembered that such ulcers may be latent and cause only slight, if any, symptoms until sudden and, as I have more than once seen, immediately fatal hæmorrhage, or else sudden perforation occurs. Or, indeed, the ulcer may be unexpectedly found at the autopsy of a case in which no significant symptoms had been present. Many cases are on record illustrating these statements. The same may be said of the duodenal ulcer; and I am reminded of the following case, which I saw but once, as it was sent to me, in 1881, by Dr. W. K. Hull, of Williamsport, for examination.

Case 1.—Duodenal Ulcer; Obscure Symptoms, Death from Perforation and General Peritonitis.

Mr. A. G., æt. 43, a dry-goods merchant of excellent personal habits, had for six years been complaining of occasional attacks of indigestion and pain (not of much severity) over the right side of the abdomen. His general health had not suffered much, though he had lost flesh moderately. His height was 5 ft. 9 in.; his weight 126 lbs.; he was of a light, spare build. He knew of no cause for his trouble, which I regarded as duodenal catarrh with hepatic congestion. He had never suffered a burn of any severity; nor any injury to that part of his body. He had been in the habit of eating rapidly without properly chewing the food. He took frequent Turkish baths, but only since the appearance of symptoms. He had never had jaundice. The urine was at times dark, but when I examined him it contained neither albumen nor sugar. There was no vomiting; no intestinal hæmorrhage; no local tenderness. The appetite was rather craving; the tongue but slightly coated; the bowels sluggish; the area of liver dulness slightly enlarged. The lungs and heart were normal; there was no marked atheroma of the superficial arteries.

I recommended the abandonment of Turkish baths; the constant use of a flannel belt around the body; a carefully restricted diet; and alternate courses of nitrate of silver and of iron, with belladonna and quinine.

I saw him on January 22. I heard from him in ten days that he was doing very well. On February 12, after a short and gentle ride on horseback, he was seized with atrocious pain in the upper part of the abdomen, followed by immediate collapse and rapidly fatal general peritonitis. The autopsy revealed an ulcer of the duodenum, which had perforated. It was seated on the anterior wall of the horizontal portion, about an inch from the pylorus. It was 3/8 inch in diameter, with sharp punched-out edges. There was no ulcer in the stomach.

I fear that it must be admitted that in this case it was impossible to make a correct diagnosis, as all the symptoms seemed adequately explained by the duodenal catarrh.

The next two cases I shall report were attended, on the other hand, with marked and alarming symptoms. They are specially interesting from their severity; from some unusual features; from the illustration they afford of the differential diagnosis of gastric and duodenal ulcer; and from their termination in recovery.

Case 2.—Gastric Ulcer; Gastralgic Pains; frequent Vomiting; Hæmorrhage; Septic Parotitis; Recovery after Desperate Illness.

Mrs. X., æt. 39, was seen in consultation with Dr. T. V. Crandall. She had been suffering for many months with uterine trouble, and had been subjected to an operation for laceration of the cervix, following which there was a prolonged state of poor nutrition and neurasthenia. Her vitality and circulation were greatly depressed. She then suffered for three months from severe paroxysms of pain of gastralgic character, recurring frequently and irregularly. There was no vomiting, but progressive decrease in power of taking and digesting food, with quite rapid loss of flesh and color. There was also tenderness over the stomach. At the close of this time vomiting began, and almost at once became very frequent and proved uncontrollable by ordinary remedies. I saw her at this time. She was immediately put to bed, upon an absolute milk diet, with repeated small blisters over the stomach, and with minute doses of nitrate of silver internally. Rectal enemas were used from the first. The vomiting was not, however, controlled either by the silver nitrate, or by any other remedy that was used; opium by the rectum was required to relieve pain and to secure rest, but it produced no good effect upon the vomiting. It was also necessary to use hypodermic injections of morphia and atropia quite frequently. The tongue became parched and brown and deeply fissured; the anæmia grew intense, and there was occasionally oozing of blood from the nose, and from the gums. Vomiting of small quantities of bright, fresh blood occurred repeatedly. At the close of ten days slight febrile action set up, the temperature rising to about 101° at night. She became so emaciated and exhausted, that it seemed that death was imminent. She was then attacked with parotitis, undoubtedly septic in character, first upon one side and then upon the other. Fortunately this ended in resolution. All internal medication was abandoned, and for many days no attempt was made to administer food by the mouth. She was anointed assiduously with sweet oil, and for four weeks was maintained exclusively by rectal enemas. Veratria ointment was used externally, in conjunction with morphia hypodermically, and opium by the rectum to control suffering. Despite her desperate condition she began to improve; vomiting grew less frequent, and blood ceased to be ejected. The fever subsided. As resolution of the parotitis advanced, she became able to bear teaspoonful doses of skim milk. This was cautiously increased, and she was kept upon an absolute milk diet for about three months. She was then able to be lifted from bed, and moved carefully to the seashore. After seven weeks of illness, recovery was complete, but was marked by protracted and obstinate constipation with troublesome rectal fissure.

Case 3.—Ulcer, Probably Duodenal; Gastralgic Pains; Persistent Vomiting; Severe Repeated Hæmorrhages altogether Intestinal; Circumscribed Tumor; Recovery after Desperate Illness.

Mrs. P., æt. 38. Was seen in consultation with Dr. H. A. M. Smith, of Gloucester City, N. J. She had enjoyed general good health, but during the autumn of 1888, had been overtaxed and worried greatly in connection with business affairs. She was attacked December 14, with severe gastralgic pain, which recurred regularly every afternoon at about the same hour. Vomiting began on December 29, and at once became frequent and was attended with marked exhaustion, so that she took to bed on January 1, 1889. In spite of various remedies and careful regulation of diet, the vomiting persisted. It presented itself rather as a frequent raising of small quantities of dark colored mucus, which at times had a purulent appearance. There were rapidly progressive emaciation, weakness and anæmia. On February 5 she had a large hæmorrhage from the intestine. The blood was dark, but not offensive. This caused extreme debility. Between that date and February 14, there was continued discharge of blood from the bowel, including six large hæmorrhages. There was not a single drop of blood vomited.

I saw her first on February 5. She was profoundly anæmic, and partially collapsed. During the ensuing ten days it seemed scarcely possible that she should survive. Examination showed tenderness to the right of the median line, and there was a distinct circumscribed induration below the lower edge of the right ribs, corresponding to the position of the duodenum. This could be outlined as a painful lump of about two inches in diameter. There was no jaundice at any time. She continued to raise frequently small amounts of dark mucus. There was no melæna after Feb. 14. Fortunately the rectum continued retentive, and the nutritious enemas were evidently absorbed. She remained in a desperate condition for nearly three weeks, and even then her improvement was so slight and gradual, that her recovery seemed doubtful for some time longer. The lump described above gradually decreased in

size, and now, May 1, is no longer perceptible. She continued to eject mucus in decreasing amounts until early in April, since when it has stopped entirely. The stomach rapidly regained its digestive power, and she is now able to eat quite freely and without any distress, meat, vegetables, bread and butter. All is well digested, and the bowels are moved daily with a healthy stool. As soon as she sat up, and her legs became pendent, she suffered very severely from numbness and anæsthesia, with a distressing sense of restlessness in them; there was no œdema. This has gradually disappeared under the use of veratria ointment with bandaging, and she is now able to walk about her room quite freely. In the treatment of this interesting case, rectal injections were used from February 1, until the last week in March. They occasioned no special inconvenience, and on no occasion did they induce an evacuation. For two weeks prior to the first hæmorrhage no nourishment whatever was retained. Reed and Carnrick's liquid peptonoids was then administered in small and frequently repeated doses. It proved acceptable and for some time was the chief reliance in feeding her, and she still continues its use. The rectal injections were given every four hours, and consisted of 8 ounces of peptonized milk, and of peptonized beef-tea alternately. Nitrate of silver was ordered on February 6, and its use was continued until 16 grains had been taken, grain ¼ t.d. being used. She then took oxalate of cerium grain 1½ four times a day for two weeks, and then resumed the nitrate of silver in small doses, $\frac{1}{10}$ t.d., which has been continued until the present date. Her complete recovery now seems assured.

It cannot be doubted that ulcer existed in each of these cases, as severe recurring pain, tenderness, vomiting, and finally hæmorrhage, were present. The interesting question arises whether, in Case 3, the position of the ulcer was gastric or duodenal. It is evident that we cannot place much reliance upon the location or character of the pains. In some cases of gastric ulcer there is severe paroxysmal pain strictly localized in a circumscribed spot in the epigastrium, coming on soon after eating, increased by pressure, and disappearing as soon as the stomach is relieved of its contents. But there are many cases, of which Cases 2 and 3 are good examples, where the paroxysms of pain assume the usual diffuse gastralgic type. It is comparatively rare that there exists such definite localized pain as will enable us to determine accurately the site of the ulcer. Nor can it be said, as will be shown in Case 4, below reported, that the character or frequency of the vomiting is conclusive. Vomiting may be absent from first to last, in either gastric or duodenal ulcer. This is, to be sure, rare. It is the rule more constantly in gastric than in duodenal ulcer that vomiting occurs repeatedly and soon after the ingestion of food. The argument is vitiated by the impossibility of determining the amount of coexistent gastric catarrh. In all the above cases this was present in marked degree; and especially in Case 3 did the character of the ejecta indicate that the vomiting was chiefly due to catarrh of the mucous membrane.

Not even when hæmorrhage occurs can we always decide. Still, it is a general rule that, in gastric ulcer, some of the effused blood—unless it escapes very slowly and all passes into the intestine, is vomited; and that on the other hand, in duodenal ulcer, unless the blood escapes very rapidly, so as to overcome the pyloric resistance, or unless the ulcer is seated very close to the pylorus and is accompanied with pyloric incompetence, the blood is discharged by stool. Case 4 will illustrate the latter statement; and Case 3, judged by this rule, would seem to be also one of duodenal ulcer. There are too many exceptions to permit a dogmatic assertion; yet here this view is confirmed by the existence of a small but distinct tumor in the duodenal region. It is important to remark that, though not a common symptom, tumor may be present in simple ulcer, either gastric or duodenal, and more frequently in the latter. The tumor is due to peritoneal exudation and adhesions, associated, in old cases, with thickening of all the tissues involved.

Even when no thickening or swelling can be detected by palpation, it is common enough to find a circumscribed spot of tenderness on pressure, which may be attributed to the sensitive state of the peritoneum outside the base of the ulcer, and which therefore may serve, when present, as a guide to the position of the ulcer. Great care is required to avoid being misled by mere epigastric hyperæsthesia, which is so common; and by tenderness of the nerve points in the abdominal walls. The position of the small tender swelling in Case 3 indicated that it was due to local peritonitis about the first portion of the duodenum; and the lesions in Case 4 showed clearly that there probably had been a distinct sense of resistance and thickening, if not of actual tumor, in the same region. Upon the whole the evidence seems to indicate that the ulcer in Case 3 was in the duodenum. There had been no severe pain—but this is merely of negative value; though it is far more usual to have recurring spells of varying intensity, as in Cases 1 and 4. There had been no jaundice, which occurs, as would be expected, in some cases of duodenal ulcer, from occlusion of the bile duct from extension of catarrh, or from thickening of the duodenal tissues. But this symptom is often absent, as in Cases 1 and 4. It should be noted also that the restoration of the tone and activity of the stomach was, in Case 3, more prompt and complete than is

seen ordinarily in cases of gastric ulcer ending in recovery. Before leaving these cases, the fever in Case 2 should be carefully noted. Simple ulcer of the stomach or duodenum is not often attended with fever. Still, this may develop from the occurrence of local peritonitis; or it may be septic, as it apparently was in this case. The complicating parotitis confirms this. The fever which occurred during the last few days of life in Case 4 was too brief and depended upon too many factors to have any special significance. The case is, however, full of clinical and pathological interest.

Case 4.[1]*—Duodenal Ulcer; Gastric Catarrh of long Standing; Persistent Vomiting; Gastralgic Pains; Repeated Copious Discharges of blood by Mouth and Rectum, followed by Death from Sepsis and Exhaustion.*

I was called to see Mr. F. on the morning of Saturday, March 2, immediately after an enormous hæmorrhage from the stomach, which had been followed by almost fatal collapse. He was 32 years old, and a man of fine physique, who had formerly for many years indulged excessively in athletic sports. It was believed by many that he had often overtaxed himself. He had also been careless in his habits of living, especially in regard to his meals, which were irregular, and eaten hastily. He had used wine freely. He had never met with any serious accident, nor received any severe burn. For fully five years he had suffered with violent gastralgic attacks, recurring frequently and irregularly. The pain was referred to the epigastrium; not rarely pressure seemed to afford relief. His spells of pain were not brought on directly by food; and he had learnt by experience that the rapid drinking of large quantities of cold milk would afford temporary relief. It was clear that gastric catarrh had long existed. Vomiting became a symptom three or four years ago, and had continued quite frequent. It would usually occur in the morning, when he would bring up without much effort considerable amounts of mucus and acid liquid. During the day, however, he would not infrequently raise small quantities of liquid, so acid that it would bite the mouth. There had never been any jaundice. Local tenderness was not complained of, but there was often distressing abdominal distension. He had been under the treatment of several physicians, but had derived no special advantage from any remedies. Most relief was obtained from restricted diet largely composed of milk. Noting this, he had continued to use milk in large quantities, especially as excessive thirst was another prominent and distressing symptom in the case. He also ate a considerable amount of solid food, while at the same time he drank as much as eight quarts of milk in twenty-four hours, taking it for the most part very cold, and in very large draughts. At times his thirst was so intense that he would raise the pitcher to his lips and drink as much as a quart at a single pull. He lost flesh moderately; had a bad color; and began to tire more readily. There had never been any blood vomited until the sudden large hæmorrhage above mentioned. He was at his office desk when this occurred, and fell upon the floor in syncope from the shock. The amount of blood which escaped cannot be estimated accurately, but an experienced physician who saw him immediately afterward says it was certainly over a quart. I saw him for the first time two hours after the hæmorrhage. He was deathly pale, with a miserably small and running pulse; and was complaining bitterly of intense thirst. There was no vomiting; the bowels had not been moved; the belly was moderately distended. He had taken a large dose of Monsell's solution. Nutritious and stimulating enemas were given. Digitalis was injected under the skin; smaller doses of the astringent were continued internally. He reacted gradually through the day, and by night seemed much better; but early on Sunday morning became restless and distressed, and soon had another enormous discharge of blood from the stomach. This again was certainly over a quart, and was soon followed by a large discharge of black tarry blood from the bowel. Alarming collapse again ensued. Monsell's solution was repeated; a bag filled with cracked ice was bound tightly upon the epigastrium; hypodermics of ether and digitalis were administered. He reacted imperfectly toward evening. No further hæmorrhage occurred. But during Monday he sank in spite of all efforts, and at 1 o'clock Tuesday morning, in consultation with Dr. J. William White and Dr. Judson Daland (whom I had placed in constant attendance upon the case), it was decided to transfuse. Dr. White injected into the left median basilic vein 32 oz. of hot saline solution, composed of sodium chloride ℥ij; potassium chloride gr. xij; sodium phosphate gr. vi; sodium carbonate ℈ij; alcohol ℥ss; distilled water, q. s. ad Oij. The temperature of the liquid injected was 110° F.

The patient's condition was desperate when the injection was given. So exsanguine was he that when the vein was opened, it lay collapsed on the grooved director with not even an oozing of blood. Within a few minutes after the injection, blood began to flow from the distal part of the vein and it soon became necessary to ligate it. Its immediate effects were gratifying, and were especially marked upon the pulse, which became slower, stronger and fuller. His thirst was constant and intense. The transfusion did not help it. The good influence of the trans-

[1] This is the same case which was reported partially in the Medical and Surgical Reporter for April 20, 1889.

fusion did not last many hours, and, in fact, its effect was so transient that at no time until the occurrence of death upon the following Saturday, March 9, did we feel encouraged to repeat it. The stomach continued retentive. The patient's demands for liquids were incessant and imperative. They were resisted with difficulty, and only small quantities of milk and lime water and of a mixture of one part of champagne with two of Apollinaris water (kept frozen in an ice-cream freezer), were given alternately. Rectal enemas of peptonized liquids were given at intervals of four hours. The rectum proved unusually tolerent. It appeared probable that all the enemas were absorbed, although from time to time large quantities of horribly offensive decomposing blood were discharged from the upper bowel. Listerine was added to the enemas as a disinfectant. The medication was exclusively by hypodermic injection. Morphia, atropia, digitalis and ether were used with great discretion and with excellent result by Dr. Daland, according to the indications from hour to hour. On Wednesday, March 6, the temperature began to rise, and on Thursday and Friday it ranged from 101°.5 to 102°.5. It sank again on Saturday prior to death. No local cause for the fever could be determined; it seemed chiefly septic, though intestinal irritation played a part. The pulse continued extremely small and weak, and rapid.

Auscultation showed a distinct systolic murmur, heard over the sternum. This was regarded as at least in part organic, and due to disease of the aortic valves. The urine was examined several times after Tuesday, the 5th. It contained a very small amount of albumen; no sugar. There were a few leucocytes, but not sufficient to account for the albumen. There were no tube casts or blood. Death occurred gradually from exhaustion and heart failure.

Autopsy showed moderate enlargement of the heart. There were short fibroid vegetations on the free surface of the aortic valves. No other cardiac changes were present. The lungs were normal. The diaphragm was unusually thick and powerful. The spleen and pancreas were normal. The kidneys were very large; there were two small retention cysts on the surface, but no serious organic change. The liver was enlarged, weighing 4½ lbs. The gall bladder was distended with 5 ozs. of dark bile; the bile ducts were normal. The stomach was greatly dilated, its capacity being over 3 quarts; its walls were thickened, and the mucous membrane showed evidences of chronic catarrhal inflammation. No ulcer or cicatrices were found. The duodenum was tightly adherent by old and firm adhesions to the liver, the gall bladder, and adjoining parts. It was greatly distended and its walls were softened, so that they readily broke upon traction. Upon its anterior face, about ½ inch from the pylorus, there was a large irregularly round ulcer, with a diameter of almost 2 inches. The tissue of the duodenal wall at this point was much thickened and fibroid. About the centre of the ulcer the pancreatico-duodenal artery was ulcerated through, each portion of the vessel containing a soft thrombus. The ulcer was shallow, with slightly terraced edges. At about the beginning of the ileum there was a small fibroid growth projecting into the bowel. The stomach and small intestines contained no blood, but, in spite of the frequent and large bloody discharges during five or six days, the colon still contained a large amount of black fæcal matter and of decomposing blood. It is evident, therefore, that at the time of the discharge of blood by vomiting, there was also an enormous amount of blood which passed down into the bowel.

There are many points of interest in this case which, for want of space, cannot be considered. Gastric catarrh had lasted so long that the patient had become accustomed to symptoms which should have caused constant alarm. The ulcer seems never to have been suspected by any of the numerous physicians he had consulted, and it is, of course, idle to speculate as to its duration, or as to whether it might have been recognized if the case had been studied carefully with suspicion alive, as it should always be where recurring pain and vomiting occur. His straight abdominal muscles were enormously developed, but the lesions about the duodenum indicated that, with proper care, the local thickening and hardening might have been detected.

All of these cases illustrate the difficulty of the treatment of simple ulcer of the stomach or duodenum. It is clear that, whenever suspicion is aroused as to the existence of ulcer, treatment must be prompt, rigid and persistent. Even when symptoms are mild, the gravest danger is lurking in the case. Taken thus, most cases recover. Strict rest; rigidly regulated feeding; full courses of nitrate of silver, alternating with oxalate of cerium, with bismuth or with copper, seem the most important elements of treatment. Careful attention to coexisting gastric catarrh by diet, by mild mineral waters, or even by lavage, may be demanded. Complications and accidents must be met promptly. Even the gravest cases may terminate favorably, after recovery seeming wellnigh impossible; so that the prognosis must not be a hopeless one as long as life lasts. The disease affords a good field for, and at times most imperatively demands, judicious hypodermic medication and rectal alimentation. The value of the latter cannot be exaggerated. In very bad cases, it may be associated with systematic inunction, and, as shown in Cases 2 and 3, life may be thus sustained for long periods, until happily the progress of cicatrization permits the resumption of feeding by the mouth.

THE TREATMENT OF ASTHMA.

Portion of a Lecture delivered in the Regular Course of 1888–89.

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For the relief of asthma an almost countless number of drugs have been suggested and tried. It is not my purpose even to enumerate these, but to call attention to those that are to-day most frequently employed with success and to those with which I have had personal expererience. Treatment of asthma is prophylactic and also is addressed to the immediate relief of the dyspnœa. In order to understand the mode of action of drugs in asthma, it is necessary to keep in mind its causes and the mechanisms within the body that are called into play in producing the phenomena of the disease. It is true that the bronchial tubes are congested during the dyspnœic attacks, but it is not probable that this is the cause of the difdifficulty of breathing. A true spasm of the bronchioles constitutes the essential change. This spasm is produced by contraction of the muscular tissue in the bronchial wall when excited by the nerves supplied to it. The initial irritation of the nervous system arises in only a moderate proportion of all cases within the bronchial tubes. In some cases of bronchitis, and in some cases of uncompensated heart disease with passive engorgement of the bronchial vessels the afferent nerves of the bronchi are irritated, and thus reflexly the efferent nerves and finally the bronchial muscles are excited. Immediate irritation of the efferent nerves may be the cause of spasm of the bronchi in these cases, although the action of drugs points to a reflex cause. More frequently the initial irritation is in some distant organ, whence reflexly the muscular nerves of the bronchi are excited. A common illustration of this mode of origin of bronchial spasm is seen in the cases of hay and rose fever that are complicated by asthma. The initial irritation is within the nose. In rare cases we find the efferent nerves to the bronchi excited by mental changes or changes originating within the central nervous system. In mild uræmic poisoning asthma occasionally occurs. Whether, in these cases, the uræmic poison primarily irritates the central nervous system and thus provokes the attack, or the peripheral nerves and bronchial muscles, is not known, but the former explanation seems probable. The mechanism, as you will notice, essential to the production of most asthmatic attacks, consists of the afferent nerves and primary irritation of their termini, of nerve centres, probably in the medulla, by which the irritation of the afferent nerves is reflected to the efferent nerves and, lastly, the efferent nerves and their endings in the muscles of the bronchi. For convenience we may name the first of these factors, the afferent nerve endings, the *source of irritation;* the second, the nerve centre, the *reflector;* and the third, the efferent nerves and bronchial muscle fibres, the *focus of irritation.*

An analysis of the mode of action of the drugs that are most successful in asthma shows that in one of three ways they relieve the spasm. We may therefore place them in three groups. These groups are characterized by the mode of action of the drugs upon the nervous mechanism involved in asthma. The first includes those that affect the source of irritation and thus prevent the development of an attack; the second those that benumb the nerve centre or reflector of irritation; and the third those that act upon the focus of irritation.

In the first group we must place a very promiscuous collection of drugs, since the source of irritation may be in almost any part of the body. We find, therefore, in this list, those medicines that allay irritability of nasal, pharyngeal, bronchial and gastric mucous membranes, and also those that allay irritability of the womb and some of the parenchymatous organs.

A very considerable number of cases have for the source of irritation the nasal mucous membrane. The irritant may be a foreign body in the air that is breathed, or a chronic inflammation of the mucous membrane, or a polypoid or other growth. Prophylaxis is readily applied to the cases of hay fever, in which foreign bodies in the atmosphere are the exciting cause and the nasal mucous membrane the source of irritation of the disease and complicating asthma. A change of climate and therefore of air is curative. The localities in this country that afford most perfect exemption are the White Mountains, Mackinac and many localities along the shore of Lake Superior, and numerous places in the more elevated parts of the Rocky and other mountainous regions. A residence in the heart of a thickly populated city will often grant to individual cases immunity, although they may suffer severely in neighboring suburbs. As these attacks are most likely to occur at certain seasons, especially in August and September and less frequently in June, temporary changes of abode at these times will usually give to those who are liable to the attacks exemption. Many of the afflicted cannot take advantage of such prophylactic treatment. It is possible, usually, to lessen the severity of attacks and sometimes to prevent them by appropriately applied medicinal treatment. There is necessary for the production of this asthma not only the specific irritant in the atmosphere, but a peculiar sensitiveness of the nerve endings which constitute the source of irritation, and possibly also of the nerve centres. Advantage can be taken of these facts in mitigating and preventing the disease when a change to a pure unirritating air is impossible. Thus, in hay fever, local anæsthetics applied to the nasal mucous membrane will frequently

hold the disease in abeyance or at least mitigate it. Of the remedial agents that can be topically applied for anæsthetic effects, cocaine is the most important. A 5 to 10 per cent. solution may be sprayed into the nose through the anterior nares and, when necessary, also applied to the posterior nares through the mouth. Or it can be employed by insufflating a powder composed of it and some bland diluent. A cocaine ointment may be used, a little being placed in the nostrils and allowed to melt and trickle backwards so as to anoint the mucous surfaces. This method is less efficacious than either of the others, since the drug is not applied so uniformly to all parts of the nose. It must be remembered in regard to cocaine that, if used in small amounts often, or in strong solution less frequently, symptoms of intoxication may be produced. I have rarely found it necessary to use preparations of more than 4 per cent. strength. Often a few applications of cocaine will greatly aid in discovering the source of irritation, for cases occur in which we suspect the source to be in the nose or throat, and if applications to these parts allay the dyspnœa, we may feel that our suspicions are well founded.

As a topical application morphia is also useful. It acts less promptly than cocaine, but often its effects are more lasting. A favorite formula of mine consists of 4 per cent. of cocaine, 2 per cent. of morphia, mixed with some inert powder or with water, according as I wish to make applications by insufflating or by spraying.

To prevent asthmas that result from the existence of chronic inflammation or tumors within the nostrils a destruction of the irritating tissue must be effected. A temporary relief can often be obtained by the use of the local anæsthetics just mentioned. Rarely the source of irritation is found in the pharynx or larynx. In such cases the irritant is usually a morbid growth or a chronic inflammation with hypertrophy. Such lesions must be treated just as are their analogues in the nasal cavity.

We must place in this miscellaneous group also the various expectorant and anodyne mixtures that are employed to allay laryngitis, trachitis or bronchitis, since these inflammations are frequent causes ofa sthma, and therefore their cure will give exemption. The efficacy of such mixtures is greatly enhanced by combining with them drugs that belong to the second group, or those that allay the excitability of the reflex centres.

In the same way asthma which accompanies uncompensated valvular disease of the heart is relieved by digitalis and similar drugs. They strengthen the heart's action and give greater tone to the blood-vessels, and thus reduce venous hyperæmia of the lungs and bronchi. These remedies accomplish more for such asthmatics than those that relax muscular spasm. They do good by stopping the irritation at its source. Cases in which the source of irritation is in the organs of the alimentary tract are relieved, and often permanently cured, by treatment of the primary lesions. Occasionally a woman is found who is persistently troubled with asthma during pregnancy, although free from it at other times. Absolute relief is, so long as pregnancy lasts, usually impossible. I have, however, seen most marked benefit obtained by the persistent use of viburnum prunifolium. This drug without doubt lessens the irritability of the uterine tissues, and thus diminishes the irritability of the source of irritation of the asthma.

The second group of drugs includes those that act on the nerve centres and thus inhibit reflex action. The most important of them are chloral, chloroform, ether, opiates and bromides. When dyspnœa is intense a few whiffs of chloroform will give relief promptly. As the relief is often not of long duration and as the drug cannot with safety be left in the hands of the sufferer, its range of usefulness is limited. Of this group, chloral is the safest and most universally useful. If the asthma is wholly paroxysmal, it is best administered in one or two full doses rather than in several smaller ones. Often 1 gram or 1½ grams, given in sweetened water, will not only relieve present dyspnœa but produce an effect sufficiently lasting to suppress the attack. In cases that occur as complicating bronchitis, trachitis or laryngitis, and in which the dyspnœa is not paroxysmal only, but to some extent is persistent, since the source of irritation is constantly excited, the best effects are to be obtained by the repetition of smaller doses of chloral or of bromides, or of opiates, or of mixtures of all these with expectorants. In this way the nerve centres are constantly inhibited or restrained in their activity, so that the paroxysms of exacerbation are held in abeyance and time is gained in which to overcome the primary inflammation. A formula that I have frequently employed with marked benefit in such cases is the following:

℞.	Chloral	grams 15.00.
	Ammonii muriatis.	" 10.00.
	Morphiæ muriatis	" .20.
	Antim. et pot. tart.	" .15.
	Ex. grindeliæ robustatæ fl. .	" 45 vel 60.00.
	Aq. vel syr. glycyrrhiz q. s. ad.	" 120.00.

Give 1 teaspoonful every three to six hours in sweetened water.

Morphia and the bromides are less generally useful than chloral. The bromides, given steadily in rather large doses, are serviceable when the source of irritation is the larynx or pharynx, for they not only act favorably by lessening the excitability of reflex centres, but also have the peculiar property of benumbing the nerve endings in the mucous membrane of the larynx and pharynx. The dose should be large, for example, 1½ to 3 grams of the bromide of sodium.

There is another class of remedial agents which

it is difficult to classify with certainty, for our knowledge of their physiological action is imperfect, and the results of researches are not completely harmonious. The drugs to which I refer are grindelia robusta, senicio aureous, quebracho, lobelia, tobacco. It seems probable, however, that as remedies for asthma they can be placed in this second group. The last of these we know produces its nauseant effects chiefly by acting on the nauseating centre in the medulla. Death from tobacco poisoning is due to paralysis of respiration. The end organs of the motor nerves are first affected, then the nerve trunks, and finally the respiratory centre. The physiological action of lobelia is very similar to that of tobacco. When lobelia is used in asthma it must be given in doses of from 2 to 4 cubic centimetres of the tincture, and repeated every two hours or oftener until vomiting and relief are produced. Mitigation of the dyspnœa usually corresponds with intense nausea and is greatest after vomiting.

Tobacco is useful only in mild cases, and when used by persons not accustomed to it. From the apparent relation of the therapeutic effect to the nausea, the action of the drugs seems to be due to an influence which they exert upon the respiratory and vomiting centres. It is not possible that their therapeutic action is due to paresis of the motor nerves, for it is only by overwhelming doses that these nerves are paralyzed. Tobacco and lobelia do not affect the muscle fibres. It must be remembered, too, that during intense nausea from any cause respiration becomes deeper and more forceful. From all these considerations, I feel inclined to ascribe their favorable action to the influence they exert over the reflex act at the nerve centre.

Quebracho has a peculiar effect upon respiration in healthy persons. It slows it and prevents panting when hurried movements are made. At the same time it retards the heart. Gutman has shown that its active principle, aspidospermine, produces death by poisoning the respiratory centre.

We know less of the physiological action of grindelia and nothing of senecio. Grindelia produces death only in very large doses, and then by paralyzing respiration. In smaller doses it slows the respiration and the heart.

The effects of lobelia must be carefully watched, for large doses have produced alarming symptoms. For this reason I have employed it rarely, but grindelia I have administered frequently and quebracho and senecio less frequently, although enough to feel confident that to some extent they are useful. They are so much less efficacious than some other remedies at our command for the relief of the dyspnœa that I rely upon them not at all for its treatment, but rather as adjuvants for warding off the recurrence of the paroxysms.

Grindelia and quebracho are probably mildly expectorant, and through their bitterness tonic to the stomach. I have seen several cases apparently exempted from severe attacks by senecio aureous only. The drug was not given during dyspnœa, but while the paroxysms were threatening and at a season when the patients were usually afflicted by them. By the continued use of it for several weeks an actual outbreak was avoided. Grindelia and quebracho are the most efficacious of these remedies. But their bitter and otherwise unpleasant taste limits greatly their eligibility. Their fluid extracts can be administered in doses of 2 to 4 cubic centimetres.

The third group of drugs embraces the nitrites and nitro-glycerine. Amyl nitrite administered by inhalation has been used in asthma for a number of years. Nitro-glycerine has been used less frequently, and the nitrites of soda and potash still less. Prof. Fraser, of Edinburgh, has given us the most trustworthy information as to the relative value of these drugs in asthma. They all relieve the spasm, and with wonderful promptness. The effects of amyl nitrite are very transitory. Nitro-glycerine, when given in doses of sufficient size, is apt to provoke congestive headache. The nitrite of soda he found gave quite as prompt relief as the others, was less likely to provoke headache and produced more enduring effects. The more purely spasmodic the case the more efficacious are these drugs. Dr. Fraser found that in two or three minutes after the administration of even half grain doses of the nitrite of soda, marked relief was noticeable in the patient's breathing and a lessening of the crowing and piping in the chest. In ten minutes or less, as a rule, the patients feel comfortable. It was rare that it was necessary to repeat the dose in any single attack. The good effect of these drugs, when administered in the usual therapeutic doses, is undoubtedly chiefly due to to their action upon the muscle fibres of the bronchial tubes, irritability of which they lessen or temporarily destroy. In other words, they act upon the focus of irritation. In less degree they may diminish the irritability of the motor nerves. This is a somewhat doubtful effect of therapeutic doses, although it can be obtained from large doses. Very large doses also lessen the excitability of the spinal cord and higher nerve centres. In using the nitrite of soda, which from considerable personal experience I can commend, it must be remembered that there are two preparations in the market, a "commercial" and a chemically pure. The former can be given in doses of from 5 to 10 grs. (gms. .3 to .6), and 20 grs. (gms. 1.3) have been given without harm.[1] The therapeutic dose of the chemically pure drug is from 1 to 5 grs. (gms. .06 to .3). Headache, although of rare occurrence from the nitrite of soda, is not always wanting. During the present fall, in the case of Mrs. C., I directed 6 decigrams of the commercial nitrite to be taken. It relieved

[1] "Therapautics, its Principles and Practice," by H. C. Wood.

the dyspnœa promptly, but produced an intense though temporary headache. While the most beneficial effects are obtained in the most frankly paroxysmal cases, I have derived marked benefit from the continued use of these remedies in asthma hat complicated bronchitis and that were to some extent persistent. In such cases I have combined the nitrite of soda with the usual expectorant and anodyne treatment of bronchitis. I have administered it in 18 to 30 centigram doses every hree to six hours. While it does not influence inflammation or allay cough, it seems to lessen the dyspnœa and prevent the paroxysmal exacerbations which recur in such cases.

Atropia, stramonium and hyoscyamus constitute another series of drugs that are analgesic to the focus of irritation. The two first are the ones most frequently used in this disease. They cause relaxation of the bronchioles, in part by benumbing their involuntary muscular fibres and in part by lessening the sensibility of their terminal nerve fibres. While efficient in aiding to give relief, their side effects are so marked and often so disagreeable that they cannot be used in efficient doses. The action of the drugs is so well known that I need hardly say that these side effects are dryness of the mouth and throat and heat and redness of the skin, dilatation of the pupil, disturbed vision and, in very susceptible patients, mental disturbances. I have rarely employed these remedies in the full doses that are necessary in order to obtain the best results in asthma, but frequently use them in smaller doses to reinforce the action of other drugs. A favorite and very efficient combination for the relief of asthmatic dyspnœa I have found to be:

℞.	Chloral	grams	20.
	Sodium nitrite.	"	3.
	Tinct. stramonium.	"	10.
	Elix. simpl. q. s. ad	"	60.

Take 1 teaspoonful every four hours in water.

Not only do these remedies act favorably when they are taken by the stomach, but the inhalation of the smoke of the crude drugs is often of the greatest benefit. Stramonium leaves are used in this way most frequently. The leaves are smoked either when rolled into cigarettes or from a pipe. Their efficacy is enhanced by first soaking them in a saturated solution of nitre and subsequently drying them for use; or they may be mixed with or rolled in bibulous paper that has been thus saturated. The nitre is decomposed by the heat and a nitrite is formed which aids in relieving the dyspnœa. There are numerous proprietary cigarettes and pastels for asthma, the basis of whose composition is stramonium and nitre.

Rarely examples of a peculiar form of asthma are seen in which the source of irritation seems to be mental or central rather than peripheral. I refer to those cases in which the dyspnœa is caused by fear, and to those in which it is excited by certain but the most varied localities or odors. If these susceptible persons are not conscious of being in the locality of the noxious object no respiratory discomfort is experienced. These are cases of mental idiosyncrasy, and usually occur in persons of an hysterical temperament. It is in such cases that valerian has sometimes been used with benefit.

Asthma occurs as a frequent complication of Bright's disease. It is caused in two ways by this disease. In some cases it arises from a complicating bronchitis, but more frequently from uræmic poisoning. When bronchitis is the cause it must be treated upon the principles already explained, but when uræmia is present a different method must be employed. The measures that are most beneficial are those that aid in eliminating the poison. Diaphoretics, diuretics and cathartics are therefore indicated. The first of these classes of drugs gives the most prompt relief. Of diaphoretics, pilocarpine administered subcutaneously is the most prompt in its action. The uræmic poisons are largely eliminated by the copious diaphoresis that it produces. It is necessary to prevent their reaccumulation. This is best accomplished by diuretics and, when they are not sufficient, the coincident use of cathartics. Cathartics and the preparation of jaborandi must be employed with much caution when a patient is debilitated or has heart weakness.

In the intervals between the dyspnœic attacks the iodides are often prescribed, and with marked benefit. Unfortunately, they do not uniformly ward off or mitigate the paroxysms. Clinicians have not yet discovered the precise indications for their use. The cases in which I have most uniformly derived good results from their employment have complicated chronic bronchitis. It is probable that their good effects are largely due to the property which they possess of promoting reabsorption of cellular exudates into inflamed tissues. The iodide of soda is the most eligible preparation for persistent employment. It should be given for weeks and often for months.

There have been observed rarely cases in which the asthma seemed due to direct irritation of the pneumogastric nerve by enlarged bronchial and cervical glands. In a few of these cases the iodides are said to have done good by reducing the glandular enlargement.

Arsenic is also frequently administered persistently in the intervals between paroxysms. How it acts we do not know. It is a remedy, as you remember, that is employed for the relief of many paroxysmal neuroses. The Fowler's solution, administered in gradually increased doses up to the point of toleration and then persistently continued, is perhaps the favorite prescription. Personally I have not been gratified with the results that I have obtained from its use.

65 Randolph Street.

ORIGINAL ARTICLES.

MICRO-ORGANISMS; AND THEIR RELATION TO DISEASE.

Read before the American Academy of Medicine, and approved by the Council for publication.

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The rôle of the microörganisms called bacteria is at present probably occupying the attention of more scientific men than any other subject in modern science. Great numbers of observers are at work on both continents in the solution of the *germ theory of disease*. Comparatively unknown till within a few years, on account of their very minute size, these microörganisms attracted attention and experimentation chiefly when the improvement of the microscope allowed objects of their size to come within the limits of its powers of observation. At first simply recognized as existing, their persistence and universality demanded question as to what they are, their origin and object.

The history of these microörganisms is related to that of spontaneous generation, to that of the fermentations, to the pathogeny and therapeutics of a great number of virulent and contagious affections; and in a more general manner to all the unknown, which notwithstanding the efforts of modern science still surrounds the origin of life and its preservation.

The bacteria are the lowest of organisms, belonging to the vegetable kingdom and are thus defined by the botanists, who have most recently occupied themselves with them: "Cells deprived of chlorophyll of globular, oblong or cylindrical form, sometimes sinuous or twisted, reproducing themselves partly by spores and by transverse division, living isolated or in cellular families, and having affinities which approach them to the algæ, and especially to the oscillariæ."

The atmosphere transports myriads of microscopic plants and animals. M. Miquel has pursued interesting studies upon them. M. Pouchet has devised the aëroscope, that bears his name, for collecting dust from the air which contains remnants of articles that we use, existing in the condition of impalpable dust, also pollen of plants, particles of mineral matter, and the spores of cryptogams, the moulds and algæ. Some micrographers have suggested that germs may be transported by the vapor of water; but Miquel's experiments show that the evaporation of water from the ground never carries any schizomycetes with it. On the other hand, dry dust, especially from hospitals, etc., is charged with microörganisms. The greatest labors, however, have been employed concerning a different class of organisms than the algæ and moulds. The plants comprising this group, under the common designation of *bacteria*, in consequence of their extreme minuteness and refractive power, are invisible in the preparations of the aëroscopes, and are recognized only by the higher powers of the microscope.

The first observer who recognized the microorganisms was Leeuwenhœck, as early as 1675. While examining with his magnifying glasses a drop of putrid water, the father of microscopy remarked with profound astonishment that it contained a multitude of little globules which moved with agility. During the following year he observed the presence of bacteria in feces and in tartar from the teeth.

M. Cohn is a naturalist who has occupied himself very much with the bacteria. In 1853 he published his first researches upon this subject and twenty years later there appeared a series of "Memoirs" devoted to these organisms. In the first paper he gives an exposition of his researches upon the organization, development and classification of the bacteria, and upon their action as ferments. His classification is:

1. The sphærobacteria, or globular bacteria.
2. The microbacteria, or rod bacteria.
3. The desmobacteria, or filamentous bacteria.
4. The spirobacteria, or spiral bacteria.

This classification has probably been accepted by more germ theorists of to-day than any other classification.[1]

The smaller spherical bacteria may be confounded with various objects, *e. g.*, molecular granules, fat globules, amorphous precipitates, etc. To distinguish these pseudo-bacteria Nägeli says: "There are but three distinctive signs which enable us to recognize with some certainty that the granules under observation are organisms: spontaneous movement, multiplication, and equality of dimensions, united with regularity of form." To which may be added the action of re-agents.

The atmosphere is laden with these microörganisms. Developing in the organic infusions into which they fall, they soon determine their complete decomposition; for during their growth bacteria live upon the nutritive material, as all other plants do upon their soil. This is putrefaction, and they are always present as the cause. As is well known, bacteria are always present in some form or other in fermenting liquids. Fermentation only occurs after the access of particles from the outer world, and it is asserted by the supporters of the germ theory that these particles are organisms or their spores, and that it is by the growth of these organisms in the fermentiscible material that it undergoes alteration. The essentials for the production of new forms are: a putrescible body, water

[1] The classification proposed by Koch is now quite universally accepted. The term *bacteria* is used in the general sense, including both the *micrococci*—the ball forms—and the *bacilli*—the rod forms. —*Written since reading of the paper.*

and air; while heat, light and electricity favor the process.

As Sir William Roberts says: "Without saprophytes there could be no putrefaction; and without putrefaction the waste materials thrown off by the animal and vegetable kingdoms could not be consumed. Instead of being broken up, as they are now, and restored to the earth and air in a fit state to nourish new generations of plants, they would remain as an intolerable incubus on the organic world. Plants would languish for want of nutriment, and animals would be hampered by their own excreta, and by the dead bodies of their mates and predecessors—in short the circle of life would be wanting an essential link. A large proportion of our food is prepared by the agency of saprophytes. We are indebted to certain bacteria for our butter, cheese, and vinegar. Our daily bread is made with yeast, and to the yeast plant (discovered in 1836 by Cagniard de la Tour, and also independently by Schwann about the same time) we also owe our wine, beer and spirituous liquors. As the generator of alcohol, this tiny cell plays a larger part in the life of civilized man than any other tree or plant."

Unfortunately for us, however, they have a powerful potency for evil also, and it is the noble aim of science to be able, by thorough study of the conditions under which that potency is acquired and exerted, to keep it under efficient control.

Much still remains to be determined with regard to the disease-producing possibilities of the germs that in invisible clouds drift in the atmosphere. The more delicate and exact methods of the most recent observers—Koch, Pasteur, Tyndall, Ehrlich, Ogsten, Sternberg and others—with regard to their nature seem to show that that there are many varieties of them, each of which has its own conditions of growth, requiring or developing best in a particular soil. Different species multiplying in different media and varying in their susceptibility to different temperatures and to different chemical reagents. Apparent identity of form does not necessarily indicate identity of nature. They are not convertible into each other. Each species produces only itself, and is produced by itself alone, and when introduced into a substance that affords a favorable soil for its growth always produces the same results. These results are not produced suddenly, but are of gradual development, progressing with the slow and steady multiplication of the organism. They may be cultivated artificially in either solid or liquid media. The best known and most commonly used solid medium is nutrient gelatine, which unites the advantage of transparency with that of solidity; but it has the disadvantage of melting at a comparatively low temperature. When it is desired to cultivate bacteria at a temperature approaching that of the human body, sterilized blood-serum may be used, or a preparation of agar-agar, a Japanese sea moss. The cut surface of a freshly sterilized boiled potato is also a very satisfactory culture medium under some conditions.

For liquid cultures a tube or bulb hermetically sealed, containing a sterilized infusion of hay or meat, is used, which will remain clear indefinitely. When, however, the germs are introduced in ever so minute quantity, they begin to develop, after a varying interval of one to twenty days, and then they rapidly increase. The liquid infusion, previously clear and pellucid, becomes more or less cloudy or turbid. When in this condition, we may be sure of the presence of rapidly increasing microörganisms in great numbers, as the microscope will invariably reveal.

It has been a widely disputed question as to whether bacteria ever occur in the animal in a perfectly healthy state; the affirmative view having been taken by Billroth and some others; but it is denied by Koch, by Pasteur and by Ehrlich, who state that they have never detected bacteria in the healthy animal. The failure of putrefactive bacteria, according to experiments, would go to show inability to struggle against the normal cells indigenous to the soil upon which they were planted. Some bacteria showed power of existence only in tissue in which vitality had entirely ceased, while others seemed to possess the power of existence in the presence of the animal cells when the latter suffered from impairment of nutrition, and the tide of life was turning against them. Abnormal composition of the blood seemed to favor the development of some bacteria, after they had found their way into the tissues.

The theory of a causal relation between bacteria and diseased processes has recently received a wide acceptation. In some diseases this relation is established, while in others it is presumed on the ground that bacteria are found in the blood and diseased products. As additional evidence in favor of special bacteria for different diseases, the fact is advanced that bacteria found in different diseases have been discovered to have different morphological and chemical properties; to which may be added of still greater value, the different appearances presented by the colonies growing upon solid culture media.

Admitting this causal relation of bacteria to disease, it must be demonstrated by successive cultures of the bacteria found to exist in the diseased person, and by the induction of the same disease in man or healthy animals by inoculation, with a reproduction of bacteria. The first discovery of the association of a germ with disease was by Pollender, in 1849, who found certain rodlets in the blood of animals suffering with splenic fever, also variously known as anthrax, charbon, miltzbrand, malignant pustule, and wool-sorter's disease. The specific character of

the parasite was afterwards pointed out by Davaine (1863), and subsequently carefully investigated and confirmed by Pasteur and Koch. The bacillus can be isolated and developed in proper cultivating media, and, when inoculated into some animals will produce splenic fever.

Again, in 1873, Obermeyer, of Berlin, discovered a bacterium in the blood of patients suffering from relapsing fever, which has been named *Spirillum Obermeyeri*. It is found only during the febrile paroxysm, disappearing during the interval. So far, attempts at cultivation have proved unsuccessful.

In March, 1882, Koch, of Berlin, announced the discovery of the *bacillus tuberculosis*, which he asserted to be the exciting cause of tuberculosis. His results have been confirmed by many observers, and the bacilli have been found in the tubercles and sputa of persons suffering from phthisis. As you all know, they reproduce themselves when cultivated under proper conditions, and cause tuberculosis when inoculated into animals.

The discovery of the parasitic origin of glanders followed closely upon that of the bacillus of tuberculosis. This was also made in Koch's laboratory by Prof. Schultz and Dr. Loeffler; and the results were verified by pure cultures and inoculations.

Birch-Hirschfeld has confirmed the discovery of the presence of a microörganism of syphilis, already announced by Aufrecht, which consists of oval-shaped micrococci in chains.

In gonorrhœa a micrococcus was discovered by Neisser, isolated, cultivated, and, it is reported, successfully inoculated.

Bacteria have also been found in malaria and in whooping-cough. A micrococcus has also been found associated with croupous pneumonia, by Friedlander. This may occur singly, but is generally found as a diplococcus.

Von Recklinghausen first described the bacteria of typhoid fever; and Klebs, in 1881, described a large bacillus, which he calls *B. Typhosus*, in which spores are formed in the centre, and often at the end. This is carried by the blood and lymphatics, and is found in all the organs. It is more generally believed, however, that the *causa morbi* is a peculiar short bacillus discovered by Eberth. This is rounded at both ends, and has spores. It is found in the ulcers, mesenteric glands and spleen; and has been cultivated by Gaffky. The inoculation of animals has not been successful; but it must be remembered that they do not have the disease spontaneously.

The *Micrococcus Vaccinæ* is very small, only half the thousandth of a millimetre in diameter, and is found isolated or in pairs, and when cultivated forms chaplets. Cohn regards *M. Vaccinæ* and *M. Variolæ* as different races of the same species, but Magnin thinks them identical. In vaccinia they are found in the lymph of the vesicle, and in its borders in the rete malpighi, and were subsequently traced into the subjacent cutis, especially in the lymphatic spaces. The multiplication and extension coincides with the development of the pustule. In variola, Chauveau (1868) first proved a particular nondiffusible active principle; and Cohn (1872) first proved that the lymph contains numerous micrococci. I have myself cultivated the *M. Vaccinæ* into the third generation in liquid media, the first inoculation being made directly from the lymph of the vesicles on a calf at Dr. Martin's stables in Roxbury; but limited experiments failed to produce characteristic vesicles on babies vaccinated from these cultures.

The comma bacillus of cholera (Koch, 1883) has of late attracted much attention. They are found chiefly in the excreta of cholera patients, are slightly curved like a comma or half of the letter U, and occur single or in pairs like the letter S; when their growth is retarded they form a spiral chain of several members. They are easily cultivated on nutrient gelatine, forming a growth easily distinguished from others, even from those which are morphologically similar, viz, the so-called cholera nostras, comma bacillus of Finkler and Prior, the mouth comma of Miller and the cheese comma of Deneke. After much experimentation Koch has succeeded in inoculating animals. The bacilli require an alkaline medium for their growth; so he injects, with a catheter carbonate of soda into the stomach of guinea pigs, to neutralize the acid of the gastric juice. Then be injects a considerable quantity of a solution containing the comma baccilli. Even this is not sufficient; for they pass through the intestines so quickly that they do not proliferate, and therefore he injects into the peritoneal cavity tincture of opium sufficient to paralyze the intestines and stupify the animal for some time. About half of the animals so treated die in from twelve to twenty-four hours, and a nearly pure culture of comma bacilli is found in the intestines.

In scarlet fever Coze and Feltz have found microcci in the blood, and inoculation of rabbits sometimes produced death; but it is not certain that it was due to scarlatina. Polae Pineas found very minute micrococci on the scales of desquamating epithelium; and in the throat discharge.

In acute infectious osteomyelitis a peculiar micrococcus is found, which is easily cultivated, and, when rabbits are inoculated, and their bones broken, abscesses form containing micrococci.

In measles, Coze and Feltz found bacteria in the blood which were minute and mobile. The rabbits were not killed. Braidwood and Vacher caused children with measles to breath through glass tubes coated with glycerine, and found sparkling bodies, something like those in vac-

cinia, but larger. These were most abundant during the second and third days. They also found them in the lungs and livers of two children who had died of the disease.

The individuals of the streptococci of erysipelas are smaller than the micrococci of vaccinia. Lukoinsky found them in zooglea masses in the lymphatics, on the border of the erysipelatous zone. Fehleisen also found and cultivated them. He inoculated the ears of nine rabbits, and produced the characteristic rash in from thirty-six to forty-eight hours; the animals did not die. He also produced typical erysipelas, in from fifteen to sixty hours, in men who were inoculated to produce beneficial results in tumors. I have also cultivated them in liquid media.

Septicæmia and pyæmia have been carefully investigated by Koch; and these diseases have been found due to bacteria, which he has cultivated and inoculated.

In diphtheria, micrococci are found in the membrane and in the surrounding lymphatics, blood, kidneys and muscles. They are about the size of *M. Vaccinia*, slightly oval, single or in pairs, and in colonies. Eberth showed the particulate character by filtration. Klebs claims to have produced diphtheria from inoculation of pure cultures, and to have found micrococci in the tissues and blood. Nasiloff inoculated the cornea with enormous multiplication of microörganisms in the lymphatics of the palate, bones and cartilages, and says that they are the primary step.

With the diphtheria micrococcus I have had a personal experience. Some membrane was secured from the throat of a child during the operation of tracheotomy to relieve stenosis caused by diphtheria, and with it one of my hermetically sealed culture bulbs (made after Sternberg) filled with a sterilized nutrient fluid, was inoculated. On the fourth day the liquid, previously clear, became turbid, and, on examination with the microscope at about 1000 diameters, it was found swarming with micrococci in active motion about the size of the micrococcus of pus. In form they were slightly elongated, and although found singly, were generally in groups of three or four to eight or twelve. A second bulb was inoculated with a fraction of a drop from the first; it became turbid on the third day, and was found to contain a microörganism identical with the former. In this way about fifty bulbs were used, and the cultivation was carried through ten generations, each bulb becoming turbid on the third day, and the micrococci breeding true.

With the contents of one of the bulbs containing the sixth cultivated generation of the micrococci, six guinea pigs were inoculated in the cornea of the eye. One of them died about thirty hours later, with symptoms of blood poisoning; but the rest survived. The eyes became very sore, the lids being much swollen and œdematous, and a membrane developed over the cornea. There was profuse discharge, which contained abundant micrococci. Three pigs were killed on the third day, and the eyes dissected for examination. The others were allowed to get well, but the eyes were completely destroyed. In the aqueous humor, and in the corner of the eyes examined, were found minute, highly refractive particles of uniform size, presumably micrococci. On the third day after killing the guinea pigs, I myself had a sore throat, and in twelve hours a large diphtheritic membrane had developed on the left tonsil, accompanied with high fever and constitutional symptoms. The disease ran a typical course, and convalescence was slow. Here, then, we have the chain of events complete. A fatal case of diphtheria, from which the germs were cultivated in pure cultures through ten generations, and the inoculation of the animals from which the experimenter himself contracted the disease with development of membrane containing micrococci, which reproduced themselves in cultures.

The question as to the origin of life has been much disputed, and the exponents of spontaneous generation and of the germ theory still continue the contest.

Extremists in the doctrine of evolution cannot sustain the hypothesis that the whole system of animal life is but a growth of one or more original species, changing into or evolving others through methods of development. The long ages of the past show the universality of the law of life, that like produces like.

Neither the agnostic nor the materialist can account for the origin of matter, much less can they account for the origin of mind. Naturalists tell us that while the animal and vegetable kingdoms are reducible to primoidal cells; that while there is a time when the embryos of species cannot be distinguished from each other by any essential features, yet the variety of structural forms, and the diversity of physiological functions which cells develop, are always according to the special type and construction of their parent cells; evidencing a unity of plan in their construction and development.

1. The germ theory asserts that no life has been evolved (except in the remotest periods of the earth's history) other than from a living parent or a living germ.

2. The spontaneous generation theory asserts that now, as of old, life does also spring *de novo* from molecular rearrangements of the atoms of dead organic matter.

No authority, except that of experimental work, can weigh a feather in the balance; no *a priori* reasoning can give the victory to either creed. The one condition is, to take dead matter, isolate it om all contact with lfe, place it

under favorable conditions for development, and watch the result.

The first views founded on experiment and observation, apart from mere philosophical speculation, are those of Needham and Buffon, published in 1748. Needham's theory was that vitality is produced by a force setting particles in motion, which he calls *force végétatrice*. Needham was opposed by Spallanzani, in 1777, who repeated his experiments by methods so precise as to overthrow the convictions based on Needham's labors. Schultz made an important advance by boiling his infusions and using pure air, and was followed by Schwann, Schroeder and Von Dusch. In 1859, Pouchet, one of the most ardent supporters of spontaneous generation, published his work. He does not look on these organisms as originating from dead matter, though he believes that it is the contact of different bodies which gives rise to the development of protoörganisms. Yet their origin is not due to affinity alone; vital force must also come into play, which owes its power to certain unknown concomitant circumstances. The essentials for the production of the new forms are, a putressible body, water, and air, while heat, light, and electricity favor the process. His experiments were performed very loosely, and are subject to many errors.

Appearing shortly after Pouchet's work and leading to diametrically opposite conclusions, were the researches of M. Pasteur, who begins by attempting to demonstrate the existence of spores in the atmosphere. The greatest blow was given to the views of the heterogenists when Pasteur demonstrated that albuminoid materials are not necessary for the development of bacteria and fungi, but that they can be replaced by crystalline salts, such as phosphates and the salts of ammonia.

The experiments of Prof. Jeffreys Wyman have been largely quoted by the supporters of heterogenesis as proving their view, though Wyman himself expressed no such opinion, having approached the subject with a perfectly unbiased mind. To Prof. Wyman is ascribed great credit by Cheyne, whose results agree with his own.

Dr. Bastian (1872) gives up the theory that organic molecules are derived from previously living molecules and attempts to demonstrate that vital force and living matter may arise *de novo* under the action of the ordinary physical forces—heat, light, and electricity. This change of front on the part of the heterogenists is clearly brought about by the overwhelming evidence produced against Pouchet's views, and more especially by Pasteur's success in cultivating organisms from dust in fluids containing no organic matter.

The limitation of cases of spontaneous generation which has been gradually taking place is very instructive. Beginning with the higher animals it became more limited, frogs, flies, etc., being by degrees excluded, till now it is only in the case of the lowest forms of life that the doctrine is asserted, and even then only in certain cases.

Not long since the people of Boston were invited to listen to a series of lectures which continues the discussion of the much-disputed question of the origin of life. The lecturer, although announcing himself as a decided opponent of the germ theory, could not agree with the spontaneo-generationists, and offered views somewhat peculiar to himself. His objective point was the so-called "*ambient organic matter*," of which he could give no definition, but in a long series of illustrations of what he meant, he showed it to be synonomous with the *bioplasm* of Dr. Lionel Beale. The term bioplasm, as Dr. Beale says, involves no theory as regards the nature or origin of the matter. It simply distinguishes it as *living*, *e. g.*, a living white blood corpuscle is a mass of bioplasm, or it might have been termed a *bioplast*; a very minute living particle is a bioplast, and we may speak of living matter as bioplasmic substance. It is bioplasm, or ambient organic matter, according to the new view, that is at the bottom of all the functions of life, it having, to a certain extent, a low degree of inherent vitality; and the results of the various experiments that have been performed are due to the ambient organic matter, which has never yet been separated, it was urged, from the germs.

It was argued that the germ theorists can prove nothing till they can isolate an organism on a needle-point and use it for innoculation, after thoroughly washing and drying. Floating dust of the air, he added, is not germs, but ambient organic matter. He also expressed a desire to introduce some ambient organic living matter into the infusions and see what it would do.

Hearing it so strongly urged that we have been mistaken concerning the action and importance of the minute organisms which have made up what they lack in size by the interest they have awakened during the last quarter of a century, it occurred to me that such a theory would be of more value if accompanied by facts based upon actual experiments, but no such experiments were offered to prove the theory, which was allowed to stand by itself. In these days a theory is accepted for what it is worth, and when it relates to science it must be supported by facts. Not considering this theory capable of self-support, and not content to leave the subject in this way, I have still further investigated it.

I am reminded of Prof. Tyndall's experiment with hermetically sealed tubes. One hundred and thirty tubes were used, and to multiply the chances of spontaneous generation they were filled with infusions of the most diverse material (in all numbering twenty-four). Each tube con-

tained an ounce of liquid and was boiled for three minutes in an oil-bath, and sealed by a spirit lamp during ebullition. Two months later this group of flasks was submitted to the inspection of the Royal Society and not one of them was found to contain life. That the infusions were not degraded by boiling was proved by similar exposed tubes which "resolved themselves with the usual speed into bacterial swarms." Special care had been taken that the temperature to which the flasks were exposed should include those previously alleged to be efficient. The conditions laid down by the heterogenist were accurately copied, but there was no corroboration of his results.

Again, sixty flasks were thus prepared containing strong infusions of beef, mutton, turnip, and cucumbers, carefully packed in sawdust and carried to the Alps, 7000 feet above sea level. Fifty arrived safely, of which twenty-three were opened on a hay-loft, and the other twenty-seven, 200 feet higher, on a ledge overlooking the Aletsch glacier. The fifty flasks, with necks open, were then placed over the kitchen stove at a temperature of 50° to 90° F. In three days twenty-one of the twenty-three opened in the hay-loft were invaded with organisms; but after three weeks' exposure not one of the twenty-seven opened in the free air had become contaminated. No germ from the kitchen air had ascended the narrow necks, the flasks being shaped so as to avoid this contingency.

Sir Joseph Lister's experiments with milk prove a great deal against the view of spontaneous generation. In his attempts to obtain pure unboiled milk, he found that in none of his flasks did he obtain lactic fermentation, but that in all but two (out of some fifty or sixty flasks), organisms of some form or other occurred, these organisms being in many flasks of totally distinct kinds. The fact that no organisms appeared in two flasks, and the great variety developed, prove that they could not have been developed *de novo*; for all being made under the same conditions any change occurring in one due to something inherent in the milk, or due to some physical force acting on it, would have occurred equally in all.

We have then a great number of experiments made by distinguished observers, of which I have quoted only a few, which show that life does not commence in substances unless something living exists in or has access to them. No one will deny the existence of the bioplasmic or ambient organic matter, but I must believe that it plays a far different rôle than was ascribed to it by the lecturer, and I also believe that the *germs* exist and play their part.

If we examine fresh blood serum, the aqueous humor of the eye, white of egg, or milk, we will find, with high powers of the microscope (1000 x), in greater or less quantity masses of varying size and shape, made up of minute, shining, highly-refractive particles, with or without Brownian motion, which have a low degree of inherent vitality, and which are bioplasmic or ambient organic matter. No one with any experience is likely to mistake these for the minute, highly-refractive bodies of uniform size, single or in groups, which we recognize as micrococci or bacteria.

These substances, then, containing the ambient organic matter in sufficient quantity, and being free from germs, were selected for testing in the experiments which I made to see if the extraordinary statements of the lecturer had a basis of fact.

Fresh blood was caught in flasks at the abattoir, as it flowed from the necks of the animals, and was sealed up until the clot had separated. Bulbs (see tables) similar to those mentioned above, sterilized by heat, were then filled with the serum, and to the culture bulbs containing sterilized nutrient fluid, serum was added in varying quantity, and the bulbs were hermetically sealed. Milk was carefully drawn from the cow into a flask sterilized by heat, from which culture bulbs were inoculated. Bulbs were filled and culture bulbs inoculated from the white of an egg still warm from the nest, and also the aqueous humor of the eyes of freshly-killed sheep. The substances introduced into the bulbs were never boiled, because it was argued that the boiling of the infusions is unfair, by rendering them sterilized, barren, and almost inorganic.

These bulbs were kept at a temperature of about 70° F., and examined with the microscope after varying intervals. Of the forty-five bulbs (see tables), forty-four remained perfectly clear and pellucid, and the microscope revealed the same bioplasmic masses as the fresh materials. In only one were there any signs of life, and this a bulb that had been inoculated with serum, was found to be undergoing fermentation, and was swarming with the germs of putrefaction, bacteria termo, proving it to have been accidentally contaminated.

In the control experiments these materials, *exposed to the air*, under the same conditions, give a far different history, as they rapidly underwent fermentation, and then contained, in addition to the same bioplasmic masses, the germs of putrefaction. Such, then, is the effect of bioplasmic or ambient organic matter, *plus* the germs, at a temperature of 70° F. Alone, however, although upon the germinal qualities of it so much has been suggested, not only does it fail to generate life, but it has no power of reproduction, and is at best an organic nutrient material, serving the highest purpose for bioplasmic use, but having in itself absolutely no independent power of growth.

DR. NELSON'S EXPERIMENTS WITH CULTURE BULBS AND BIOPLASMIC MATTER.

No.	Substance Tested.	Day Exam.	Condition of Fluid.	Scum.	Sediment	Microscopic Appearances.
1	Serum from sheep's blood	6	Clear.	None	None	Same bioplasmic masses as fresh serum.
2	" " " "	6	"	"	"	" " " " "
3	" " " "	6	"	"	"	" " " " "
4	" " " "	6	"	"	"	" " " " "
5	" " " "	11	"	"	"	" " " " "
6	" " " "	16	"	"	"	" " " " "
7	Culture bulb inoculated with serum from sheep's blood	6	"	"	"	" " " " "
8	" " " "	6	"	"	"	" " " " "
9	" " " "	6	"	"	"	" " " " "
10	" " " "	6	"	"	"	" " " " "
11	" " " "	6	"	"	"	" " " " " and in addition, active bacteria termo very abundant.
			Slightly turbid.			
12	" " " "	9	Clear.	"	"	Same bioplasmic masses as fresh serum.
13	" " " "	9	"	"	"	" " " " "
14	" " " "	11	"	"	"	" " " " "
15	" " " "	16	"	"	"	" " " " "
16	" " " "	17	"	"	"	" " " " "
17	" " " "	17	"	"	"	" " " " "
18	" " " "	17	"	"	"	" " " " "
19	" " " "	17	"	"	"	" " " " "
20	" " " "	17	"	"	"	" " " " "
21	" " " "	17	"	"	"	" " " " "
22	" " " "	17	"	"	"	" " " " "
23	" " " "	17	"	"	"	" " " " "
24	" " " "	8	"	"	"	" " " " " (This bulb inoculated from No. 1 at 9th day.)
25	Serum from sheep's blood	9	"	"	"	Same bioplasmic masses as fresh serum.
26	" " ox's blood	6	"	"	"	" " " " "
27	" " " "	6	"	"	"	" " " " "
28	Culture bulb inoculated with serum from ox's blood	6	"	"	"	" " " " "
29	" " " "	6	"	"	"	" " " " "
30	" " " "	17	"	"	"	" " " " "
31	" " " "	17	"	"	"	" " " " "
32	Aqueous humor of eye of sheep	6	"	"	"	" " " " "
33	" " " "	6	"	"	"	" " " " "
34	Culture bulb inoculated with aq. humor of eye of sheep	6	"	"	"	" " " " "
35	" " " "	6	"	"	"	" " " " "
36	" " " "	6	"	"	"	" " " " "
37	Culture bulb inoculated with milk	4	"	"	"	" " " " "
38	" " " "	4	"	"	"	" " " " "
39	" " " "	4	"	"	"	" " " " "
40	" " " "	5	"	"	"	" " " " "
41	Albumen—white of egg	5	"	"	"	" " " " "
42	" " " "	5	"	"	"	" " " " "
43	Culture bulb inoculated with albumen, white of egg	5	"	"	"	" " " " "
44	" " " "	5	"	"	"	" " " " "
45	" " " "	5	"	"	"	" " " " "

RÉSUMÉ OF DR. NELSON'S EXPERIMENTS WITH CULTURE BULBS AND BIOPLASMIC MATTER.

Substance Tested.	Day Exam.	No. of Exp'ts.	Total No.	Microscopic Appearances.
Bulbs filled with serum from sheep's blood	6	4		Same bioplasmic masses as fresh serum.
	9	1		" " " "
	11	1		" " " "
	16	1	7	" " " "
Culture bulbs inoculated with serum from sheep's blood	6	5		Same bioplasmic masses as fresh serum, and one in addition active bacteria termo very abundant.
	9	2		Same bioplasmic matter as fresh serum.
	11	1		" " " "
	16	1		" " " "
	17	8		" " " "
	8	1	18	" " " "
Bulbs filled with serum from ox's blood	6	2	2	Same bioplasmic masses as fresh serum.
Culture bulbs inoculated with serum from ox's blood	6	2		Same bioplasmic masses as fresh serum.
	17	2	4	" " " "
Bulbs filled with aqueous humor from eye of sheep	6	2	2	Same bioplasmis masses as fresh serum.
Culture bulbs inoculated with aqueous humor	6	3	3	Same bioplasmis masses as fresh serum.
Culture bulbs inoculated with milk	4	3		Same bioplasmic masses as fresh serum.
	5	1	4	" " " "
Bulbs filled with albumen, white of egg	5	2	2	Same bioplasmic masses as fresh serum.
Culture bulbs inoculated with albumen	5	3	3	Same bioplasmic masses as fresh serum.
			45	

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MEDICAL PROGRESS.

On the Identity of Erysipelas and Acute Lymphangitis. — Verneuil and Clado, after many microscopical experiments, say on this subject: Erysipelas and acute lymphangitis are two affections, closely related to each other, which are best and most frequently observed on the surface of the body, the nature and relations of which have often been discussed without all perfectly agreeing on these points. Some consider them one and the same disease, or at the most two forms of the same disease; others separate them entirely, although admitting that they may exist at the same time and become one.

Those taking the former view (among whom are Verneuil and Clado) advance the following arguments:

1. They have the same anatomical seat in common; lymphangitis occupies the trunk, and erysipelas the branches of the lymphatic system; both invade the ganglions.

2. The similarity in the pathological process; the two affections present, wherever they are visible, the principal symptoms of a true inflammation.

3. The same starting-point in an interruption of the continuity of the skin surface.

3. The same symptoms; chills, vomiting, rapid rise of temperature, etc., with the same general symptoms of a sudden intoxication.

5. The inability, in a great many cases, of the physician to say whether he has to do with lymphangitis or with erysipelas, or with a combination of both, as the disease begins sometimes in one form, sometimes in the other.

To these numerous and powerful arguments Messrs. Verneuil and Clado add another which, based upon microscopical observation, is absolutely decisive: the discovery in lymphangitis of the erysipelas microbe. This discovery, in the cases which the authors observed, combined with the results of the pure cultures and inoculations made by them, led them to the following conclusions:

1. Erysipelas and lymphangitis are simply different forms of the same contagious, infectious, parasitic disease.

2. Their agent is a special microbe which may be easily recognized, isolated, cultivated and inoculated upon animals.

3. This microbe, which had been discovered and described in erysipelas only, is also found in acute lymphangitis with all its proper qualities and characteristics.

4. It establishes, therefore, the absolute identity of two affections which, by numerous authors, have been considered so far as different diseases. —*La Semaine Médicale*, 1889, No. 16.

Paget's Disease of the Nipple.—Dr. J. Darier declares that follicular psorospermosis is not the only affection of the skin caused by parasites of the class sporozoæ. Another, which differs from the first named and is caused by another kind of psorospermæ, is Paget's disease of the nipple. In 1874 Paget called attention to a chronic affection, apparently eczematous, of the skin of the mamma and aureola, which is almost always followed by cancer of the breast: The numerous authors who have since published such cases, enumerate as characteristics of the eruption which distinguish it from common eczema: its limitation by a well defined line, the parched induration of the skin, the absolute incurability, and finally and especially the complication, after a shorter or longer period, by a cancer. Histological examinations by Bultlin, Fhin, Duhring and others did not explain the nature of the affection, which some have since regarded as an eczema which extended to the milk channels, and others as an unknown disease *sui generis.* Darier thinks that the following facts will render it possible to understand the peculiarities as yet unexplained of this type of disease.

If some of the scales are taken from the diseased surface and dissolved in water or in a solution of iodide, whether directly or after maceration in diluted ammonia or bichromate of ammonia, small round bodies, surrounded by a refracting

membrane with double contour, are at once discovered among the epithelium cells and often in their interior. These bodies have a diameter which is larger than that of the cells or equally large; their membranes contain a mass of protoplasm or of more or less numerous corpuscles. These bodies are always found in sections or fragments of the excised skin, in all the layers of the epidermis, and especially in the glandular prolongations of the epidermis. The character of these bodies admits the conclusion that we have to do with psorospermæ or coccidix. They are present in all stages of evolution; a mass of protoplasm, at first naked, subsequently surrounded by a membrane, divides itself later on into numerous granules enclosed in a cyst.

The epithelioma of the mamma contains similar parasites, and also a large number of elements which cannot with certainty be distinguished from epithelial cells, but which are often enclosed in other cells. Bultlin, who saw this in 1876, thought it an instance of endogenesis. The parasites are probably more numerous than they appear to be. That they play a part in the formation of the tumor seems probable, since there is in each lobe a certain number of coccidix in their characteristic form.

It is a well-known fact that the presence of these organisms in the tissue of the epithelium produces a budding and extension of it; it is known from the psorospermosis of the gall ducts of the rabbit, and Darier demonstrated it in the follicular psorospermosis in man. Mr. Albarran quite recently exhibited epithelioma containing coccidix, and further demonstrations of this kind will soon be quite numerous. It is, therefore, logical to suppose that the parasites which produce the epidermic lesion in Paget's disease of the nipples, cause also the epithelial growth of the milk channels which constitutes the epithelioma.

The above facts appear important from different standpoints. Paget's disease of the nipple is a parasitical affection, a psorospermosis; its diagnosis becomes easy by microscopical examination of scales such as Darier made in four cases. Then also, this disease furnishes a first indication of the nature and the pathogeny of certain epitheliomas. —*La Semaine Médicale*, 1889, No. 16.

DURATION OF VITALITY OF TYPHUS AND CHOLERA BACILLI IN THE FÆCES.—PROFESSOR DR. J. UFFELMANN, of Rostock, on the basis of experiments tending to solve this question, which largely agree with those made by Kitasato, has come to the following conclusions:

In human fæces, that is in human fæces and urine, the cholera bacillus retains it vitality for four days at the utmost, if these fæces are kept, as usual, in privies or in large kegs or tubs. As a rule it dies much sooner, generally with the second or third day, often even on the first day. It seems to retain its vitality longer in a mixture kept at a temperature of more than 16° than in fæces kept at a lower temperature than 9°. It can also be found for a longer time in those fæces to which it was added in large numbers, than in those which contained but few. Whether the addition of urine hastens the end of the bacillus the author is not able to say. But the fact is of importance that it retains its vitality for at least twenty-four hours.

As regards the typhus bacillus, it was found to possess great power of resistance. Under certain conditions it retains its vitality for four months; it may even be assumed that it may last much longer, even since it existed in certain samples in large numbers at the expiration of that period. But its vitality in the fæces is not always the same; different temperature seemed to have a decided effect, experiments showing that in fæces kept at a temperature of 17°, or more, the bacilli increased in number, whereas with a temperature of less than 10° an increase is not to be thought of.—*Centralblat für Bakteriologie und Parasitenkunde*, 1889, No. 16.

MENTHOL IN ASTHMA. — DR. TH. JORES, of Kastellaun, had been treating since October, 1888, a lady 50 years old who had had, in the summer of 1888, several large polypous growths removed from her nose by a specialist. When Jores took charge of the patient her principal trouble consisted in periodically (every two or three days) occurring congestions to the head, combined with difficulty in breathing. Hand- and foot-baths, purging, applications of several leeches to both sides of the proc. mastoid. gave no relief.

Gradually the congestion subsided, whilst the difficulty in breathing increased. Against these attacks, which were purely asthmatic, Jores used in the course of treatment a long series of drugs, all of which, however, were effective for a few days only. A communication in the *Allgemeinen Medicinischen Central-Zeitung* which he saw in December, regarding the favorable effect of menthol in lung disease (which effect was said to be especially on the secretion of mucus), induced him to use menthol. Whilst before the use of the drug (a 20 per cent. solution of menthol in ol. oliv.) auscultation of the lungs showed everywhere crackling and rattling noises, the trouble completely disappeared as by magic after a few inhalations; auscultation showed perfectly normal breathing, heart-beat unchanged, pulse full and strong. Patient, on being asked, simply remarked that her head felt sometimes benumbed, "as though she had inhaled chloroform without taking enough of it." Since its first application (January 2, 1889), the drug has proven effective in every attack, always with prompt success.—*Therapeutische Monatshefte*, 1889, No. 4.

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SATURDAY, MAY 25, 1889.

A BRIEF REVIEW.

The records of the Association for forty years are nearly written. At Newport, on the 25th of June next, its Fortieth Annual Meeting will be convened. A few words with reference to its history and purposes will be of interest to those who, during later years, have become members of the Association.

In 1845 the New York State Medical Society, by resolution, "recommended a *National Convention of Delegates*, from medical societies and colleges in the whole *Union*, to convene in the City of New York, on the first Tuesday in May, 1846," and in the preamble set forth the objects of the meeting. In answer to that recommendation a National Convention of Delegates from medical societies and colleges assembled in the City of New York, May 5, 1846, and Dr. Jonathan Knight, of New Haven, Conn., was made chairman. Sixteen of the United States were ably represented in this Convention. A series of important resolutions was introduced, and after full consideration it was determined to refer them to special committees, who should report upon them at a second Convention to be held at Philadelphia during the following year.

On May 5, 1847, this second Convention assembled in Philadelphia, and Dr. Knight, of Connecticut, was continued chairman. The Convention was largely attended by delegates from nearly every State and Territory, and continued in session for three days. The various committees presented a series of able reports upon the resolutions which had been referred to them severally at the previous meetings. These reports were fully discussed and, with such modifications as were deemed judicious, were adopted.

At the evening session of the third day of the Convention, May 7, 1847, it was unanimously "*Resolved*, That this Convention do now resolve itself into THE AMERICAN MEDICAL ASSOCIATION, and that the officers of the Convention continue to act as officers of the Association, until others are appointed."

A committee representing twenty-one States and the District of Columbia was appointed to nominate permanent officers for the Association. Nathaniel Chapman, of Philadelphia, was the first President elected. All the various officers were appointed, the committees were named, the business of the Association completed, and the Association adjourned to hold its first annual meeting in Baltimore in May, 1848.

The subsequent places of meeting and the Presidents in order have been as follows:

1848. Baltimore, A. H. Stevens, New York.
1849. Boston, J. C. Warren, Massachusetts.
1850. Cincinnati, R. D. Mussey, Ohio.
1851. Charleston, James Moultrie, South Carolina.
1852. Richmond, B. R. Wellford, Virginia.
1853. New York, J. Knight, Connecticut.
1854. St. Louis, C. A. Pope, Missouri.
1855. Philadelphia, Geo. B. Wood, Pennsylvania.
1856. Detroit, Zina Pitcher, Michigan.
1857. Nashville, Paul F. Eve, Tennessee.
1858. Washington, H. Lindsley, District of Columbia.
1859. Louisville, Henry Miller, Kentucky.
1860. New Haven, Eli Ives, Connecticut.
1861. No meeting.
1862. No meeting.
1863. Chicago, Alden March, New York.
1864. New York, N. S. Davis, Illinois.
1865. Boston, Constitution amended. Same officers continued.
1866. Baltimore, D. H. Storer, Massachusetts.
1867. Cincinnati, H. F. Askew, Delaware.
1868. Washington, S. D. Gross, Pennsylvania.
1869. New Orleans, W. O. Baldwin, Alabama.
1870. Washington, Geo. Mendenhall, Ohio.
1871. San Francisco, Alfred Stillé, Pennsylvania.
1872. Philadelphia, D. W. Yandell, Kentucky.
1873. St. Louis, T. M. Logan, California.
1874. Detroit, J. M. Toner, District of Columbia.
1875. Louisville, W. K. Bowling, Tennessee.
1876. Philadelphia, J. Marion Sims, New York.
1877. Chicago, H. I. Bowditch, Massachusetts.
1878. Buffalo, T. G. Richardson, Louisiana.
1879. Atlanta, Theophilus Parvin, Indiana.
1880. New York, Lewis A. Sayre, New York.
1881. Richmond, J. T. Hodgen, Missouri.

1882. St. Paul, J. J. Woodward, U. S. Army.
1883. Cleveland, Jno. L. Atlee, Pennsylvania.
1884. Washington, Austin Flint, New York.
1885. New Orleans, H. F. Campbell, Georgia.
1886. St. Louis, Wm. Brodie, Michigan.
1887. Chicago, E. H. Gregory, Missouri.
1888. Cincinnati, A. Y. P. Garnett, Dist. of Columbia.
1889. Newport, W. W. Dawson, Ohio.

These annual meetings have been largely attended by prominent medical men representing every section of the United States. The division of the members into Sections for the purpose of special work was early found to be a necessity. The mornings are given to matters requiring consideration in general session; the afternoons to Section work. Thus ample provision is made for the presentation of papers, and for discussion in each of the special departments. The interests of the profession at large, as well as of writers themselves, cannot be better served than by giving to these several Sections the cordial support and the best service that the profession can command. Every provision for the presentation of papers in the different departments of medicine and surgery, and for their full discussion, is as ample here as can be made for special sessions elsewhere.

Among the many important and valuable results which the Association has labored to accomplish we may name:

First. By the early adoption of a Code of Ethics which commends itself to the approval of all medical men, it has clearly defined the rules that should govern, not only among members of the professson, one with another, but also their relations with the people.

Second. It has fostered fraternal fellowship, and helped to bring into close and friendly relation the medical men of all parts of this broad Union.

Third. It has always been the earnest advocate of a higher standard of medical education and in every way possible has sought to stimulate original investigation.

Fourth. Its influence has always been helpful to our medical colleges—and it has favored the maintenance of medical societies, both State and local, everywhere.

Fifth. For the purpose of assuring the closest possible relations with the masses of the profession—it even commits its own management to their delegates, as they shall come fresh from the local societies to express their will, from year to year, rather than to permanent members, who might in time misrepresent their constituencies.

The Association is in accord with the genius of American institutions. It is National in its representation, and never sectional in interests. It is in no sense exclusive, and yet makes ample provision, for those who by reason of talent and culture, may best serve the profession as instructors and guides. More than at any previous time it commends itself to the cordial support of the profession, and it is to be hoped that it will continue to command the services of the ablest men in the profession for the furtherance of the interests of Medicine in America.

THE LICENSE TO PRACTICE.

In THE JOURNAL of May 11th, was given the able address on this subject, delivered to the Medico-Chirurgical Faculty of Maryland recently, by PROFESSOR WILLIAM OSLER. It contained a fair exposition of the evils that have resulted from leaving the whole control of medical education in this country to a large number of Medical Colleges, subject to no uniform regulations, but each authorized to grant the degree of Doctor of Medicine on such terms as its Faculty might deem proper, and yet, until quite recently, such degree or diploma was a sufficient authority to practice medicine and surgery in all the States.

The author of the address correctly states that, "the *right* to regulate the practice of medicine rests with the State." And he might have added, that the highest judicial tribunal known in this country has recently decided "that this right comes within that general *police power* which extends protection to the life and limb of the citizen." We are pleased to find him clearly and unreservedly advocating the establishment in each State of a competent tribunal, or examining board, to *examine* all candidates for license to practice, without regard to college diplomas. Whether such Board of Medical Examiners are appointed by the Governor, with the approval of the Senate, or by direct election by members of the medical profession, allowing every person legally authorized to practice, to cast a vote, we think of far less importance than the terms of the law by which the Board shall be guided in the discharge of its duties. No State Board of Examiners, however appointed, will succeed in effectually pro-

tecting the people from the depredations of ignorance and imposition, unless the law explicitly defines the minimum standard of general education necessary to qualify one to enter upon the study of medicine; and the minimum standard of medical acquirements, both theoretical and practical, necessary for safely entering upon direct practice. With these standards well defined, the State Board becomes an executive body for efficiently and impartially enforcing compliance with the provisions of the law. The law itself should state the minimum length of time each person should devote to the study of medicine, embracing all its departments, and how much of that time should be in direct attendance on medical college, practical laboratory and hospital clinical work.

The powers and duties of a Board of Medical Examiners should be purely executive and not legislative. The only legitimate object for which legislative interference with medical education and practice can be justified, being to secure for the people an educated and competent body of medical men, it is plain that the law must provide but one standard of qualifications and one uniform system of examinations for all. We cannot agree with Professor Osler, and many others, that the important department of materia medica and therapeutics might be either omitted from the examinations, or the applicant for license be permitted to choose which so-called system of therapeutics he will be examined in. On the contrary, every applicant should be examined and required to furnish evidence of having a fair knowledge of all systems. No student of regular medicine should be licensed to practice unless he also understands clearly the distinctive facts and principles of homeopathy, eclecticism, and every other medical *ism* that he is to come in contact with among the people. And no student of any one of these pathys or isms should receive a license to practice unless he is also possessed of a good knowledge of regular therapeutics as practiced by more than nine-tenths of the medical men of Europe and America. How else can any young man or woman, proposing to enter upon the practice of medicine, possibly judge what remedies and what principles guiding their application, are best and most efficient in relieving human suffering, if they have studied less than half the field, and even that under strong partisan bias? If the State undertakes to secure for the people an educated medical profession, its laws should define clearly the standard of education required for all, and provide an efficient and impartial Board of Examiners to enforce it alike on all applicants. Then every person having passed the ordeal satisfactorily, must be allowed to exercise the most perfect right of private or individual judgment in the application of his knowledge in the practice of any or all departments of his profession.

GOOD SENSE AND CORRECT LAW.

The New York Medical Times recently proposed the following question to HON. GEO. E. BARRETT, Judge of the Supreme Court of New York: "Has a physician designating himself a '*homeopathist*,' and called as such to a patient, any legal or moral right to adopt any other than homeopathic means in the treatment of the case?" To which the judge gives the following unequivocal answer:

"If," he says, "I call in a medical man who designates himself as a 'homeopathic physician,' it is because I do not wish to be treated otherwise than homeopathically. There is an implied understanding between myself and the homeopathist that I shall receive the treatment, which, by tradition and a general consensus of opinion, means small doses of single drugs administered upon the principle of *Similia similibus curantur*. If there be any variation from that method, I have a right to be informed of it, and to be given an opportunity to decide. Common honesty demands that before a confiding patient is drugged with quinine, iron and other medicaments, either single or in combination, he should be told that the 'homeopathist' has failed, and that relief can only be afforded by a change of system. An honest 'homeopathist,' who has not succeeded, after doing his best with appropriate remedies administered on homeopathic principles, should undoubtedly try anything else which he believes may relieve or save his patient. But when he reaches that point the duty becomes imperative of taking his patient into his confidence. The patient may accept the services of the homeopathist, or he may prefer another physician.

"All this is the logical sequence of a man calling himself 'homeopathist.' If I call in a man who is known simply as a physician, then I expect him to employ any or all means he may deem

necessary for my relief. With such an expectation I called for his aid. Hence, if we are to have a class of men who propose in the interest of humanity to utilize the best that they can find in any or every school, 'pathist,' as a designation of fixed methods of practice, must be ignored, and the broad and noble title 'physician,' in its unreserved sense, be revived and substituted. When a patient sends for a physician of this class, he will understand that he is to have the physician's best judgment in the unprejudiced use of the ripest fruits of modern discovery in every field."

How much longer will it require to enable law makers and the people generally to see the folly and absurd exclusiveness of the special designations assumed by persons claiming to practice medicine?

SOCIETY PROCEEDINGS.

Medical Society of the District of Columbia.

Stated Meeting, January 23, 1889.

THE PRESIDENT, CHARLES E. HAGNER, M.D., IN THE CHAIR.

DR. GEORGE N. ACKER presented

TWO CASES OF TUBERCULAR PERITONITIS, WITH SPECIMENS.

Case 1.—Joseph Brown, æt. 4, colored. Residence 427 O street, alley. Father and mother both living and apparently healthy. Child was perfectly healthy up to six months ago, when he was taken with measles, which left him weak and with a cough. Three days ago was taken with diarrhœa, from three to six movements daily, for which he was admitted to the hospital August 22, 1888.

Present condition.—General appearance much emaciated, abdomen pendulous. Temp. 99.5°. Has a dry hacking cough, with fine moist râles over both lungs anteriorly and over left lung posteriorly. Respiration 30. Tongue coated white, thirst, anorexia, pain in epigastric region, diarrhœa, one to four movements daily, character of stools yellow with white flakes. Abdomen very tympanitic.

August 24, temp. subnormal (96.5°–97°), perspires profusely, one movement of bowels in last twenty-four hours.

August 26, temp. still subnormal, three dark watery stools.

August 28, stools formed, no diarrhœa. Temp. subnormal.

August 30, general condition better.

September 5, gradually improving. Evening temp. 99.1°; morning 97.4°.

September 10, from one to two passages of bowels in twenty-four hours. Temp. again subnormal. General condition much better, allowed to sit up.

September 20, general condition much better, allowed to get up and go about the ward. Temp. about normal.

October 1, apparently well except the distended abdomen.

October 15, boy has some cough but allowed to go about the ward.

October 26, cough continues. Physical examination shows dulness at left apex ant. Broncho-vesicular breathing with fine moist râles over left apex ant. Patient put to bed.

November 1, temp. a little above normal.

November 7, patient is becoming emaciated, cough somewhat exaggerated, perspires profusely at night, abdomen much distended.

November 17, since the 7th has had from one to four passages from the bowels in twenty-four hours. Temp. ranges from normal in the morning to 102° in the evening.

November 20, evening temp. 102.5 to 103°.

November 24, abdomen enormously distended.

November 28, patient is gradually growing weaker. No treatment seems to relieve the tympanitic condition of abdomen. Very restless at night.

November 30, temp. ranges from 99° – 100°. No apparent change in condition. Has from four to five stools daily.

December 3, a consultation was held, when the following physicians were present: Drs. Lovejoy, King and Dr. Acker, including the attending surgeon, Dr. Thompson. A laparotomy was suggested, but as no fluid could be detected in the peritoneal cavity Dr. Thompson thought an operation would be useless.

December 10, no apparent change except more emaciated.

December 20, temp. normal, patient very weak.

December 27, evening temp. 101.4°; morning 101°.

December 29, abdomen considerably reduced in size.

January 1, 1889, died 10:15 A. M., from exhaustion.

Necropsy held twenty-four hours after death; rigor mortis slight, general appearance much emaciated, enlarged lymphatic gland left groin. On opening the chest numerous adhesions were found in left pleura, due to the deposit of tubercle. The left upper lobe was thickly studded with tubercular masses, lower lobe presented decided thickening of the walls of the bronchial tubes, probably due to free-bronchitis. Over anterior surface of left lung small portions were

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found to be in a condition of atelectasis. Right lung normal except in a state of passive hyperæmia. Diaphragm and capsule glisson were the seat of caseous masses about one-fourth of an inch in diameter. In the umbilical region the pairetal layer of peritoneum was firmly attached to the mesentery by numerous adhesions, and could only be separated with considerable force. No fluid was found in the peritoneal cavity. Spleen slightly enlarged. Other organs normal.

Case 2.—Ida Samson, æt. 2, colored. One year ago was taken with pneumonia, which left her with a bad cough, which has continued up to the time of her admission to the hospital, November 19, 1888.

Present condition:—General appearance fairly well nourished. Temp. 100.5°. Has a paroxysmal cough, no expectoration, rapid breathing, small and large râles over both lungs anteriorly.

December 1, physical examination shows marked dulness over apex of left lung, also bronchial breathing. Cough continues about the same.

December 17, face and hands very œdematous. Perspires profusely.

December 24, swelling has nearly disappeared from face and hands.

December 28, gradually growing weaker.

January 4, died from exhaustion.

Necropsy held twenty-four hours after death: rigor mortis slight, body much emaciated. On opening thorax numerous adhesions were found on left side. The upper lobe of left lung was found entirely consolidated, small emphysematous spots were found on lower lobe, left side. A few miliary tubercles were found over surface of left lung, pleura and diaphragm. On opening the peritoneal cavity about six ounces of fluid escaped. Several large caseous masses were found in the mesentery the size of a large hickory nut. About these masses the mesentery was found to be deeply injected. Other organs normal.

Dr. J. Ford Thompson: When he was first asked to see this patient, Joe Brown, he favored an operation; but the second time he examined the patient he abandoned the idea. He now based his opinion upon the fact that the child was nearly dead, and that it had a resonant and tympanitic abdomen. There was no dulness and he could not detect fluid. He could not see what an operation would accomplish. Dr. Acker favored an operation. He had never seen such an extensive tubercular disease in the abdomen; the intestines were adherent as one mass, and there was not a spot that he could find to contain the fluid that was supposed to have been in the abdominal cavity. From the enlarge mesentericd glands and the enormous deposits in the mesentery he unhesitatingly called it tabes mesenterica. What could an operation have accomplished in such a case? The intestines were so adherent that Dr. Dillenbach tore them in getting them out. The absence of fluid in the abdominal cavity proved this to be an exceptional case. Dr. Acker reports a case which is wholly unlike this, in which the surgeon operated for a cystic tumor. Any surgeon would have operated in that case. Had he operated in Dr. Acker's case he would have had the credit of killing the child.

Dr. Acker: The glands were not enlarged as much as we usually find in tabes mesenterica. It was undoubtedly tubercular enlargement. Dr. Thompson had contended that the mesenteric glands were greatly enlarged, but Dr. Lamb had confirmed his (Dr. A.'s) statement that they were only enlarged about as much as is usually found in tuberculosis. Dr. Thompson had seen this patient a month and a half before she died, and it was then that Dr. Acker thought that he detected fluid in the peritoneal cavity. He now believed that this fluid had been absorbed and passed by the numerous stools which she had been having daily for sometime prior to death. If the child had been operated on about December 15, when it was first seen by the consulting staff, some good might have been accomplished. The cases reported had been benefited by laparotomy.

Dr. Thompson: Dr. Lamb's statement had surprised him very much, especially as Dr. Dillenback had reported to him that he had torn out masses larger than walnuts. There was not a mesenteric gland in the whole specimen that was not diseased, which was apparent from microscopic examination. It would have been madness to have operated upon such a case. If he could have detected fluid he would have performed laparotomy but the abdomen was highly resonant. What would an operation have accomplished in this case?

Dr. Busey desired to learn something more about the surgical treatment of such cases, and would therefore ask Dr. Acker to supply the clinical histories of the cases he mentioned. Had the tuberculosis invaded any other structures? In Dr. Aker's case there was also tubercular disease of one lung. Did Dr. Acker propose to operate for cure in this case? In the cases reported as operated on was there any complication, or was the tuberculosis confined to the peritoneum? Did the clinical histories of the reported cases correspond with that in Dr. Aker's case? For if simply opening the abdomen in cases of tuberculous peritonitis would cure them, it was one of the most marvelous anticipations of surgery. He could only arrive at a conclusion after knowing the clinical histories, and what was proposed by the operation. Judging from what had been said he thought it was a simple operation with a marvelous result.

Dr. George Woodruff Johnston had looked over the literature of this subject about a year ago and found 20 or 30 cases that had been oper-

ated on that were reported at the German Surgical Congress and elsewhere. There was fluid in the peritoneal cavity, sometimes encysted and sometimes free. A large per cent. were cured by the operation. That they were cases of tuberculosis was proved in many instances by the detection of the bacillus tuberculosis in excised nodes. The abdomen was drained, the wound sometimes closed and the fluid did not reaccumulate. In some drainage was the only treatment; in some the abdominal cavity was washed with a solution of salicylic acid and other antiseptics; and in still others iodoform was applied. Pulmonary lesions seemed to form no decided contra indication to the operation; in fact, after the operation the pulmonary lesion improved markedly. The operation is limited in its indications; and in certain cases it is contraindicated. Where there is fluid in the abdominal cavity the operation is indicated; and when there is no fluid present, as appears to have been the case with Dr. Acker's patient, nothing could be achieved by opening the abdomen.

DR. LAMB: In one of the specimens the glands were enlarged as much as an inch in diameter; and in the other there were tubercles and fibrous tissue.

DR. THOMPSON agreed perfectly with Dr. Johnston. There was no place for fluid in this patient's abdominal cavity. The operation may be justifiable in some cases and not in many others.

DR. ACKER: The tubercular process was limited to the left lung of this patient.

DR. M. F. CUTHBERT presented for Dr. J. Taber Johnson:

1. VAGINAL HYSTERECTOMY: NOTES OF A SUCCESSFUL CASE.

2. OVARIAN TUMOR: NOTES OF THE CASE.

Mrs. B., white, æt. 53, mother of five children, all living, had been treated for cancer of the uterus for several weeks by Dr. N. S. Lincoln. Dr. L. referred her to me for operation the last week in November, 1888. As there was no odor to the discharge I consented to receive her in my private hospital, and at once operated for the removal of the entire uterus.

The operation was difficult on account of the almost complete destruction of the intravaginal portion of the cervix. When the vulsellum was applied it would tear out of the friable cervical tissues, making the separation of the bladder and rectum very tedious. The main point of interest in the operation was the use of the pressure forceps to control hæmorrhage instead of ligatures, as recommended by Péan, of Paris, Dudley, of Chicago, and others. The use of Keith's long-bladed and long-handled forceps made it unnecessary to use more than one pair on each side of the uterus. Dudley, in his recent paper, states that, in one operation, as many as seventeen pairs of small pressure forceps were left dangling from as many bleeding points.

Wathen, of Kentucky, recently reported a case to the Southern Gynecological Society in which he operated successfully, there being about twenty forceps applied to bleeding points and protruding from the vagina. Some operators remove the forceps in twenty-four hours, while others leave them on three days. I left mine on as long as precedent permitted, and finally removed them on the third day with some fear and trembling lest uncontrollable hæmorrhage should follow. None occurred, and the patient made an uneventful recovery and left the hospital for home on Christmas day, just three weeks from her operation.

She had no shock following the removal of her uterus, and her speedy convalescence was marked by less trouble than frequently follows Emmet's operation for a lacerated cervix. She has since continued well except some irritation of the bladder which troubles her principally when she stands or walks too much, when she feels "a drawing or pulling sensation, as if something had healed crooked," as she says. I presume the bladder misses some of its support when she stands erect. I used no sutures in any of the tissues, and no dressing except a little iodoform gauze in between the forceps in the vagina. I have now done this operation four times, with two deaths and two recoveries.

One advantage claimed by Reamy and others for the use of the pressure forceps over the ligature in this operation is, that the tissues grasped by their blades, as well as that above them, all sloughs away, thus destroying more tisssue than the ligature, and rendering the return of the disease less liable to occur on this account. They are much more easily and quickly applied than ligatures, and at the same time ensure better drainage; and as time and drainage are important factors in vaginal hysterectomy, the use of the pressure forceps would seem to be an important improvement in this difficult and dangerous operation.

Mrs. S., white, German, æt. 42, the mother of five living children, was referred to me by my friend, Dr. C. H. A. Kleinschmidt, about a month ago. She had been well up to September last, when, in an ocean voyage across the Atlantic, she was made conscious of a sore lump in the right side of her abdomen. She thought that excessive seasickness had made her sore and lame.

This condition of things continued after her arrival in this city, and she consulted Dr. Kleinschmidt, who, upon examination, discovered a tumor which he diagnosed as ovarian. Its rapid growth and the pain attending it caused him to fear malignancy. When I saw it I agreed with his diagnosis and shared his fears that it might already be undergoing cancerous degeneration,

and recommended an immediate operation as the only mode of saving her life.

In the course of the succeeding month, while the family were coming to a conclusion and making the necessary arrangements for an operation, it greatly increased in size, and on account of her pain and other symptoms she was compelled to spend much of her time in bed. She was taken to a private room in Providence Hospital on the 14th of this month, and after several days of preparatory treatment she was operated on the 19th inst., in the presence of Drs. Kleinschmidt, Cuthbert, Crook, Sellhausen, Schneider, Van Rensellaer and others. The usual incision was made, the cyst was tapped with Tait's trocar and about 10 quarts of very dark-colored fluid withdrawn. The cyst was multilocular, and before it could be withdrawn several smaller cysts were also tapped, discharging different kinds of fluid, some of it being thin, of a light straw-color, and some of it being a thick colloid material which would not flow through the trocar.

The cyst wall was so firmly attached to the omentum that a number of ligatures were required to control hæmorrhage after its separation. There was quite a firm adhesion to the parietal peritoneum on the left side, which was probably the cause of the pain from which she had suffered. The pedicle was at first clamped with three of Keith's long blade pressure forceps, and the tumor cut away from its very broad pedicle. The omentum was then drawn out upon the abdominal wall, carefully pressed with hot sponges, ligatures applied to several bleeding points, and carefully returned. The abdominal cavity was thoroughly washed out with several pitchers of filtered hot water, the pedicle was transfixed, ligated, trimmed and dropped. No further bleeding having occurred, the abdominal wound was closed in the usual way and the usual dressings applied. The fluid and solid parts of the tumor were found to weigh about 30 lbs. The other ovary, being normal, was not removed. The patient is now in the latter part of her fifth day and bids fair to make a good recovery. I should be glad if the microscopical committee would kindly examine the solid parts of the tumor and report upon the question of malignancy.

Tennessee State Medical Society.

Fifty-Sixth Annual Meeting.

FIRST DAY—MORNING SESSION.

The Tennessee State Medical Society met in its fifty-sixth annual session in the Senate Chamber of the State Capitol on Tuesday, April 30th ult., with the largest attendance that it has ever had during its existence, no less than 185 members being in attendance. All parts of the State, the eastern, western and middle divisions were ably represented by earnest, able and progressive members of the profession.

The Society was called to order at 10:30 o'clock by the President, Dr. T. J. Happel, of Trenton. Secretary, Dr. D. E. Nelson, of Chattanooga, and Treasurer, Dr. Richard Cheatham, of Nashville, were in their places. Drs. Charles M. Drake of Knoxville, and C. W. Beaumont, of Clarksville, Vice-Presidents for East and Middle Tennessee respectively, were present. Dr. D. D. Saunders, of Memphis, Vice-President for the Western Division, was absent.

Prayer was given by Rev. Dr. Scroggins, of Mexico.

DR. G. C. SAVAGE, Chairman of the Committee of Arrangements, made remarks concerning railroad rates and entertainment.

A recess was taken to allow the Committee on Credentials, composed of Drs. W. T. Briggs, J. P. C. Walker and G. W. Drake, time to prepare a report.

DR. J. S. CAIN, in the absence of Chairman Saunders, of the Committee on Legislation, made a verbal report of that committee. He detailed the progress of the medical regulation bill in the Legislature, and spoke favorably of the law. He believed it could be made effective if a proper, judicious committee would watch its operations and from time to time report recommendations of changes. He submitted a resolution setting forth, that as the law, while in many respects is imperfect and objectionable, it is a step in the right direction, and if judiciously administered will result in the correction of many of the evils from which the profession and the public suffer; that in the opinion of this Association, it is a duty incumbent upon every reputable physician in the State, to lend his aid and influence to the faithful enforcement of the law, and to strive to obtain such future legislative amendments as may render the same most efficient in elevating the standard of honorable medicine in our State, and in protecting the public against the evils of ignorant quackery: further, that the Association repudiates the term *Allopath*, which by some means gained admission into the said Act as a term of contradistinction from *Homœopath* and *Eclectic*, respectfully declining to be side tracked with these dogmatists upon an exclusive "pathy," and re-asserting the broad dominion of regular or honorable medicine as embracing the entire field of medical agencies.

The report and resolutions were adopted.

DR. C. W. BEAUMONT, of Clarksville, said the law was now upon the statute books as a result of forty years' labor, and no matter how imperfect it might be, it should be made as effective as possible, and the way to do so was by wise and judicious administration.

He offered a resolution which provided that the President of the Society should appoint two members from each grand division of the State, who, with himself, should act as a committee, to select four members of the Medical Examining Board, and suggest the same to the Society at 11 o'clock next day, and that the Society suggest these names to the Governor for appointment.

After some further discussion the Society adjourned to 2:30 P.M.

AFTERNOON SESSION.

The Society was called to order at 2:30 o'clock and the discussion of Dr. Beaumont's resolution continued.

DR. G. W. DRAKE, of Chattanooga, moved to amend Dr. Beaumont's motion so as to provide for the nomination of three examiners instead of four.

DR. GARDNER, of Dyersburg, said the mass of the people in his section were opposed to having the State regulate medicine, and he thought the Governor should be allowed to make his own appointment without interference from the Society.

DR. DUNCAN EVE favored the acceptance of the amendment and the nomination of a committee to select three Examiners.

DR. DEERING J. ROBERTS stated that the medical regulation bill was now a law. He was a law abiding citizen of the State of Tennessee, and would endeavor to abide by its laws. While the enactment was not such as was desired by the most ardent advocates of "Protection for Medicine," it was the law of the land, and he believed that the best plan at present was to keep our hands off, and as good citizens abide by the law. It had its objectionable features, as admitted by the representative of the committee to whom was appointed the duty of looking after its enactment. It had been accepted by the Society by a vote that is now on our minutes, and it seemed to him that it was now at least, as it had ever been, incumbent on us to keep our hands off. To take any further action in regard to it, other than to obey the law as it stands may evoke a question that had best not be raised.

Drs. Lipscomb, Powell and Menees made vigorous arguments in favor of the appointments.

The motion was put and carried. Drs. Deering J. Roberts and W. F. Glenn asked leave to file their protests, which was granted.

This question being settled, the next business was a most excellent and practical paper which was read by Dr. J. E. Reeves on the *Use of the Microscope*.

DR. C. H. LOVELACE, of Dukedom, then read a paper on *Enlarged Tonsils with a Report of a Case of Excision*, which elicited quite a lengthy discussion.

The President appointed as a committee to select nominees for Medical Examiners: Drs. Thos. Lipscomb, C. N. Cooper, G. W. Drake, T. K. Powell, J. W. Penn, C. W. Beaumont. The Society adjourned until 8 o'clock.

NIGHT SESSION.

The night session was held as a public meeting in the Theatre Vendome. A large audience, composed of members of the Society and their friends, and many ladies and gentlemen of the Capital City were present, and a pleasant occasion had.

Music was furnished by the Italian band.

The meeting was opened with prayer by Rev. Dr. Fitzgerald.

The address of welcome was delivered by Dr. G. W. F. Price, Gov. Taylor not being able to be present.

DR. T. J. HAPPEL, of Trenton, President of the Society, delivered an able address on *Alcohol as a Medicine*.

A concert under the direction of Mrs. A. H. Stewart was excellently carried out and received much applause.

SECOND DAY'S SESSION.

The Society was called to order at 9:30 by the President.

Prayer was offered by Rev. C. D. Elliott.

DR. T. J. MURRAY, of Butte, Mont., was invited to a seat in the Association.

DR. THOS. LIPSCOMB, of Shelbyville, made a report of the Committee on Necrology, giving particulars of the death of Drs. J. M. Towler, of Maury, and H. H. Clayton, of Murfreesboro. Papers concerning each were read and filed.

THE PRESIDENT named the following physicians who had died during the preceding year, and whose deaths had not been reported: Dr. H. Lane, Calhoun; H. W. Purnell, Memphis, and B. F. Lackey, Lauderdale County.

DR. D. J. ROBERTS moved that the name of the late Dr. Thomas B. Buchanan, of Arkansas, formerly of Nashville, be added to the list. Carried, and Dr. Roberts by vote of the Society was requested to prepare a memorial of Dr. Buchanan for publication in the *Transactions* of 1889.

On motion of Dr. Plunkett the Necrological Committee was increased to one member from each Congressional District.

DR. D. E. NELSON, Secretary of the Society, submitted his report, which was accepted and filed. It showed, previous to the meeting, 254 members in good standing.

DR. J. B. MURFREE, of Murfreesboro, read an able and lengthy paper on *Diseases peculiar to Gestation*.

This article excited lively discussion, which continued about two hours. Among those discussing it were Drs. O. C. Omohundro, Thos. Menees, Thos. Lipscomb, P. H. McKinney, L.

C. Chisolm, W. A. Atchison, J. W. Maddin, Sr., W. A. H. Coop, W. F. Glenn. The paper was referred to the Committee on Publication.

DR. RICHARD CHEATHAM, Treasurer, submitted his report for the past year, showing receipts amounting to $367.67, and disbursements of $536.35, leaving a balance of $168.68 due the Treasurer.

The committee appointed to suggest names for recommendation to the Governor for appointment as Medical Examiners submitted its report, making the following nominations: East Tennessee, Dr. C. Deadrick, of Knoxville; Middle Tennessee, Dr. J. B. Murfree, of Murfreesboro; West Tennessee, Dr. D. D. Saunders, of Memphis, and alternate, Dr. J. W. Penn, of Humboldt. The report was adopted.

Dr. G. W. Foster, of Stevenson, Ala., was invited to a seat in the house.

On motion of Dr. W. F. Glenn, 3 o'clock was fixed as the hour of holding the anual election of officers.

The Society adjourned till 2 P.M.

AFTERNOON SESSION.

A resolution that Dr. Thos. Lipscomb be made an honorary member of the Society, and that from and after this meeting he be exempted from all dues, was carried.

DR. PAUL F. EVE, of Nashville, read a paper on *Hip-Joint Amputation*, which he illustrated by a living subject, a colored man, who, on the 10th of last October, was accidently shot in the thigh by a 42-calibre bullet, and the amputation of whose right leg at the hip had been necessitated.

DR. ROBERTS spoke of the operation as one of the comparatively few successful cases of the kind. The paper was referred to the Committee on Publication.

DR. F. M. Duke, of Wartrace, read a paper on *Typho-Malarial Fever*.

Three o'clock having arrived, the election of officers was taken up, and the selection of a President declared in order.

The first nomination was that of Dr. Duncan Eve, by Dr. G. A. Baxter, of Chattanooga.

DR. J. B. MURFREE, in a neat address, nominated Dr. C. W. Beaumont, of Clarksville.

The ballot resulted: Eve, 79; Beaumont, 55. Dr. Eve was declared elected and was escorted to the stand by Drs. Savage and W. F. Glenn. He was introduced by Dr. Happel. He said he would not consume the time of the meeting by a speech, but he was thankful for the honor, and would be satisfied if he should make as good a President as Dr. Happel had proven. The following Vice-Presidents were elected: East Tennessee, Henry Berlin, of Chattanooga; Middle Tennessee, Jas. B. Neil, of Marshall; West Tennessee, J. P. C. Walker, of Dyersburg. The committee appointed to audit the report of the Treasurer reported the same as correct. Drs. D. E. Nelson, of Chattanooga, and Richard Cheatham, of Nashville, were unanimouslv re-elected Secretary and Treasurer respectively.

After considerable discussion, Memphis was selected as the place of the next annual meeting, to be held the second Tuesday in April, 1890.

A paper on *Laparotomy in Visceral Gunshot and Incised Wounds* was read by Dr. C. S. Briggs, of Nashville. A paper on *Heterophoria* was read by Dr. G. C. Savage, of Nashville, and illustrated by a number of patients.

The Society adjourned to 8 o'clock.

NIGHT SESSION.

The Society was called to order by the President at 8 o'clock.

The Secretary read a letter from Dr. J. R. Rathmel, of Chattanooga, regretting his enforced absence, and enclosing a paper on *Tubercular Meningitis*. This paper was referred to the Committee on Publication.

A paper prepared by Dr. J. A. Cook, who was forced to leave during the afternoon, was also handed in and referred.

DR. R. F. KEYS, of Nashville, read a paper on *the Physiological Action of Alcohol*. After some discussion it was referred to the Committee on Publication.

The next paper was read by Dr. C. W. Beaumont, of Clarksville, on *Asphyxia Neonatorum*.

DR. W. F. ROCHELLE, of Jackson, read a paper on *Long Standing Uterine Displacements Incurable; What Shall We Do With Them?*

The papers read were referred to the Committee on Publication.

At 10:30 o'clock the Society adjourned to meet at 9 o'clock next morning.

THIRD DAY—MORNING SESSION.

The Association was called to order at 9:30 o'clock by President Happel.

Prayer was offered by Rev. Dr. C. H. Strickland.

DR. T. J. HAPPEL announced that he would now turn over the gavel of office to the newly elected President, Dr. Duncan Eve. He thanked the Society for its favorable treatment of him, and said that while he had labored to faithfully discharge his duties, the unprecedentedly large meeting this session was mainly due to the efforts of the Secretary, Dr. D. E. Nelson.

DR. EVE called the body to order.

DR. L. R. MOSS moved that a resolution of thanks be tendered Dr. Happel for his excellent administration as presiding officer of the Association. The motion was seconded and carried unanimously by a standing vote.

DR. J. D. PLUNKET stated that there was in the library of the State Board of Health a printed copy of the report of the proceedings of the Med-

ical Society for 1853, which he believed to be the only one published before the war now in existence. This contained a full list of members up to that date, all the other records before the war having been destroyed.

A motion that a committee of three, of whom Dr. Plunket should be Chairman, be appointed to make a synopsis of this report for publication was adopted.

A motion that the President appoint a new name in the place of any member nominated for State Medical Examiner who might resign was carried.

The thanks of the Society were returned to the Secretary and the Treasurer, and $50 voted to the former in some recognition of his services.

DR. DEERING J. ROBERTS moved that the Society pass a resolution requesting the Legislature at its next meeting, May 7, to pass the bill providing for the registration of births, deaths and marriages. After much discussion the resolution was adopted.

A paper on *Report of Surgical Cases* prepared by W. B. Wells, of Chattanooga, who was unable to be present, was read by title and referred to the Committee on Publication.

The next paper was read by A. J. Swaney, of Gallatin, on *The Wire Corset in the Treatment of Spinal Affections*, with exhibit. It was discussed and referred to the Publication Committtee.

DR. W. D. HAGGARD, of Nashville, read a report of *Four Abdominal Sections*, one of which was a successful case of hysterrorhaphy, which was discussed at length.

A paper was read by Dr. C. N. Cooper, of Cleveland, on the subject, *Report of a Case of Self-Castration and a Case of Ovariotomy with Complications.*

DR. F. T. SMITH, of Chattanooga, made an exhibit of Surgical Instruments.

A paper by Richard Douglas, on *Hysterectomy*, was read by title and referred.

Dr. W. F. ROCHELLE, of Jackson, read a paper on *Gonorrhœa and its Treatment.*

DR. T. A. ATCHISON was requested to prepare for publication his remarks on *Recent Additions to Our Pharmacopœia.*

DR. RICHARD DOUGLAS, by request, made a talk on his recent visit to Europe.

A vote of thanks was extended the Committee of Arrangements, the press, railroads and hotels.

After announcing the following committees, the President declared the Society adjourned until the next annual meeting at Memphis :

Committee to wait on the Governor to urge the appointment of the physicians nominated by the Society for the Examining Board—Drs. G. S Glenn, J. S. Cain and J. D. Plunket.

On Credentials.—Drs. T. J. Happel, A. P. Warterfield, W. F. Crunk, G. B. Thornton, G. A. Baxter, J. D. Plunket and M. Campbell.

On Arrangements.—Dr. D. D. Saunders with power to appoint the others.

On Publication.—Drs. D. E. Nelson, D. J. Roberts, C. S. Briggs, W. M. Vertrees, P. D. Sims, J. B. W. Nowlin and J. M. Coyle.

On Necrology.—First Congressional District, Dr. N. T. Dulaney ; Second, Dr. C. Deadrick ; Third, Dr. P. D. Sims ; Fourth, Dr. T. M. Woodson ; Fifth, Dr. Thomas Lipscomb ; Sixth, Dr. J. D. Plunket ; Seventh, Dr. B. J. Harlan ; Eighth, W. C. Crook ; Ninth, Dr. T. K. Powell; Tenth, Dr. F. L. Sims.

Delegates to the American Medical Association.—Drs. G. B. Gillespie, T. K. Powell, W. H. Harris, A. P. Warterfield, Richard Douglas, W. F. Glenn, W. J. Miller, C. N. Cooper, B. B. Lenoir, W. F. Crunk, W. K. Sheddan, B. J. Harlan, J. A. Witherspoon, J. H. Tripp, W. A. H. Coop, D. E. Nelson, M. Campbell, T. J. Happel, D. C. Savage, T. R. Moss, A. J. Swaney, N. T. Dulaney, Paul F. Eve, J. Berrien Lindsley, J. W. Penn, C. W. Beaumont, D. J. Roberts, A. B. Brown, J. B. W. Nowlin, J. D. Plunket, F. M. Hughes, J. W. Maddin and F. B. Sloan.

The American Surgical Association.

Annual Meeting, held in the New Army Medical Museum, Washington, May 14, 15, and 16, 1889.

DR. DAVID W. CHEEVER, of Boston, delivered the *President's Aadress* on

THE FUTURE OF SURGERY WITHOUT LIMIT.

I believe that we are warranted in saying that the future of surgery is without limit. I deduce this conclusion, first, from considering what the mind of man has already done ; second, from the future possibilities of fields hitherto unknown and unexplored, but now opening up to science. There can be but two limitations, either in the mind of man or in the subject.

Since the time when in the anthropoid the cerebral lobes first began to creep over and cover the cerebellum, what a growth has taken place in the penetrating power of the human senses. The brain has progressed from the rude hammer of the prognathous cave-dweller to the telescope and the microscope. Originally of vision far less acute than the eagle's, the eye of man ranges from the fixed star to the twenty-thousandth of an inch bacteria. We analyze the sun's gases with the spectrum ; we follow the magnet unerringly on the sea ; we utilize the lightning ; we count the vibrations of sound ; we measure light ; we speak across the ocean ; we estimate the age of our planet ; we analyze atoms ; we compose new substances ; we make

pictures from light; we photograph and map the stars; we explore the pole and test the glacial history of the world; we find subterranean springs and light our homes from old volcanic sources; we measure the crevasses in the glaciers of Mars; we count tides by the moon; we defy the wind with steam; we foretell storms by the barometer; we construct isothermal lines; we inspect the bottom of the sea; we demonstrate eclipses; we measure space by the transit of Venus; we predict comets; we find a solar and a stellar unit of time; we unravel Egyptian chronology; we trace man downward through the stages of evolution. Man invents the wheel, the ship, the pendulum, the syphon. Under the water, in and on the earth, in the air, in the infinity of space, in the infinity of microörganisms, the mind finds no limit, but is ever-restless, ever-searching. And now in medicine, averting pestilence, annulling pain, destroying sepsis, shall we stop?

In gradual development the brain of man has gone on, step by step, investigating itself, until we localize disease by the tracings on cerebral surfaces and condense in that wonderful cortical substance a palimpsest of impressions, mental and material. The brain studies itself. Know thyself, said the Greek, and in searching the crypts of the human brain we may well echo the description of the greatest of the sons of men, "How noble in reason! How infinite in faculties! In apprehension, how like a God!

We pass now to the second limitation; in the subject itself. Long since it was said that all was found out in anatomy, and that surgery had nearly reached its limit. Far from this, the microscope has created a new anatomy and a new pathology; physiology changes yearly; the lower animals yield light by the Baconian test of experiment. Anæsthesia enlarged surgery; antisepsis emboldens surgery and we can set no limits to the advance.

The three secret cavities, the abdomen, which means the hidden; the thorax, which holds two feet of the tripod of life; the skull, which conceals the nerve force, the vital principle, all are explored.

Medicine, always obscure, is growing clearer, and instruments of precision have been applied to our art. The clinical themometer is the tell-tale of internal changes, inflammatory or septic. What have we to fear? We advance haltingly, but we advance.

Specialism exhausts localities; by its occasional discoveries enlightens medicine; by its failures calls sometimes a halt. Specialism tempered by general medicine becomes a safe companion in our march onward.

It becomes us soberly to inquire how to study the new seats of surgical exploration. What new methods are needed; Where must we be conservative? Where can we be bold? Since medicine is composed of a science and an art, we must study the science to develop the art. The four pure sciences are anatomy, physiology, chemistry, and pathology. These purely scientific portions of our profession are the only ones that can yield positive knowledge, and this only by dissections, experiments and analyses.

Modern surgery deals with anatomical regions hitherto insufficiently studied. First, the *fasciæ*, the lining and bindings of the muscles, vessels and nerves, have great influence in determining the course of suppuration and the size and locality of abscesses. A perfect dissection and preparation of the fasciæ does not exist. It is, perhaps, impossible to make it. Frozen sections and their photographs give the best idea of the relations of the fasciæ. Familiar instances of the importance of the arrangement of the fasciæ are to be found in the Psoas sheath, the saphenous opening, the triangular ligament of the perineum, the deep cervical fascia, the fascia lata, the fascia of the forearm and the annular ligament, the posterior ligament, or fascia of Winslow in the popliteal space.

Next, the topographical anatomy of the viscera, especially in the abdomen, not only the variations in the reflexion of the peritoneum, but the mobility of the organs; the rythmnic changes produced by respiration on the veins, on the diaphragm as an agent of displacement, and on the pelvic diaphragm, the perineum; the incessant movements of peristalsis its power to change the locality of organs. All these have not been sufficiently considered by the diagnostician and by the operator. Normal splanchnology and frozen sections of the abdominal cavity are of more worth to the student than the mnemonics of the origin of all the muscles and the twigs of all the arteries. The exact relations of the mediastine to the œsophagus, aorta, pericardium and pleural cavities are of great importance also.

No less directly useful is an exhaustive and and minute topography of the brain, the bearings of falx tentorium, corpus colosum, ventricles, the centers of decussating fibres, the ultimate origin of the fibres of the cranial nerves, the sinuses, the relations of the middle-ear, the petrosal sinuses, the mastoid cells and their variations, the fissures of Sylvius and Rolando.

When we consider physiology we are struck both by its great progress and by its imperfections. The older physiology is obsolete and discarded, but in the newer physiology the functions of some large and important organs are still undetermined. The ductless glands, for instance, the spleen, the thyroid, the thymus, the supra-renal capsules. An ignorance of their functions renders the surgeon unable to predict the consequences of their removal. Of what avail the brilliant operation to excise a double goitre, if it is to be followed by an obscure degeneration of the nervous or glan-

dular systems? Again, in organs of known functions, the limit of the digestive power of different portions of the alimentary canal is not yet definitely learned. How can we get along without a gall-bladder? How important is the pancreas? Can the duodendum supplant the stomach in nutrition? How much ileum can be removed without starvation? What will the rectum digest? All these are pertinent questions for the physiologist, and have a direct bearing on modern surgery.

In chemistry, the whole study of sepsis, antisepsis, fermentation, germicides, the viability of spores, is in its infancy; and as certainly as it already has reversed surgical practice, will it do so again and again.

The great desideratum of surgery now, if chemistry can supply it, is a new, constant, local anæsthetic. This would enable us to banish a chief cause of secondary shock from our operations.

Finally, in pathology we have much to learn and to influence our surgical practice. Diseased organs change appearance and they change place. A double puzzle is thus presented to the operator. On opening the abdominal cavity we are sometimes at loss to locate an organ, and even fail to recognize it, so changed is its look and its surroundings. One part is mistaken for another, a sac for intestine, intestine for sac, adhesions for peritoneum, and so in many other instances. It is of the last importance that the operating surgeon should be so familiar with the pathological changes that he can distinguish the false from the true at a glance.

The future destiny of coarse pathological changes of organs, whether they are hopelessly diseased; whether they can recover; whether the affection is organic or inflammatory, is also to be decided, rightly or wrongly, by the surgical expert on a brief inspection.

Having considered how much we may learn or hope from the pure sciences, we pass to the other limitation of the subject, the arrest or the cure of morbid processes. All surgical disease is inflammatory or organic; we must advance by checking the inflammatory process, or by preventing morbid growths; the first, by arresting suppuration; the second, by discovering the causes of all change and cell proliferation. Through surgical pathology lies the only path. True conservative surgery would then be limited to arresting the consequence of traumatism. The earlier labors of Paget and the later ones of Virchow, Pasteur and Koch, give us some hope of being able to abort suppuration, to inoculate for tubercle, or to eliminate the cancer cell. The abortion of inflammation is now much advanced by the progressing knowledge of asepsis. Pyæmia, the opprobrium of surgery, has been enormously reduced in frequency. When suppuration has occurred evacuation, drainage and antisepsis have been equally successful in shortening the pyogenic process and in promoting repair. In tubercle we see the best results follow the évidement of Sedillot, both in cancerous bone and in suppurating lymphatics.

As in variola, may we not hope that a modified germ may jugulate the tubercle bacillus, by inoculation? or if we meet not the success which the modification of rabies is slowly attaining, that chemistry may give us a reagent to devitalize the germ of tuberculosis.

Cancer, to include under that term all recurrent tumors, is, by Virchow's nomenclature, a misplaced cell growth. Modern research now gives us hope of finding the cause of this maldevelopment, and if a germ should be discovered here, a germicide will be finally found.

The manual part of our art—chirurgery, handcraft, requires also to be perfected, in connection with the advancing boldness with which we open cavities and feel the pulse of life in its central shrine. New operations demand a new technique, new modes, new instruments, a new code of rules; all to be learned by experiment. Nowhere, perhaps, could the French saying, "*jeur chirurgien, vieux medecine*," be more applicable. It is to the young surgeon, born and bred in asepsis, that the older physician must look for progress in our art.

In estimating, then, the limitations of surgery, we find none, except they be set by ourselves. How should they be set? By conservative judgment opposed to rashness. In the list of modern and useful operations as distinguished from those barely justifiable, are the following:

1. To remove growths or foreign bodies from the cavities of the body: Opening the brain; opening the spinal cord; displacement of the upper jaw or of the nose for nasopharyngeal polypi; cutting into the pharynx from outside the neck to remove tumors of the tonsil; œsophagotomy for foreign bodies; thyrotomy for growths; gastrotomy for foreign bodies; opening the gall bladder for the removal of stones; opening the pelvis of the kidney for calculi; suprapubic cystotomy for calculi and tumors of the bladder; ovariotomy; removal of the diseased uterus or its appendages; laparotomy for gunshot wounds, and for extrauterine fœtation; excision of the lower part of the rectum for growths.

2. To reach and evacuate inflammatory products: Opening the chest and resecting the ribs for empyema; opening the abdomen for appendicitis, or for chronic peritonitis; opening and drainage of pelvic abscesses; of abscess of the vertebræ; opening of deep abscesses of the neck; evacuation and draining abscesses of joints; perinephritic abscess and removal of one kidney.

3. To relieve obstruction: Intubation and tracheotomy; gastrostomy and enterostomy; colotomy; perineal section; herniotomy.

4. To restore continuity: Resection and suture

of bowel; resection and union of bones; resection and reunion of nerves; nerve grafting; reunion of tendons and of muscles.

5. Unclassified procedures: Plastic and osteoplastic surgery, modifications of orthopædics, including bone resections and excisions; litholapaxy; reduction of dislocation of the hip and of the shoulder by applied anatomy; endoscopy; rhinoscopy and removal of turbinated outgrowths; pathology and removal of adenoids; aseptic wiring of fractures; local anæsthesia in setting fractures; closing of skull wounds by the insertion of buttons of bone.

6. Operations as yet *sub judice* or on trial: Resection of pylorus; resection of cancerous intestine or omentum; removal of the spleen; of large bronchoceles; of the larynx; the pancreas; the prostate gland; the normal ovary; fixation of the kidney or of the uterus; puncture of the pericardium; opening gangrenous abscesses in the lung; tapping the ventricles of the brain.

Rash statements are to be discounted; rash operations are to be discouraged. The wisdom of our earliest Greek master in analyzing the imperfection of our art holds true to-day: "*Ars longa, vita brevis est; occasis fugax, experimentia follax; judicium difficile.*" Yet with Bacon came the new light of experiment. In his immortal words: "*Recte veritas temporis filia dicitur, non auctoritas.*" Lean not on authority; the test of truth is time.

The death of Dr. S. W. Gross, of Philadelphia, was reported, and Drs. D. W. Yandell, J. Ewing Mears and P. S. Conner were appointed a committee to prepare appropriate resolutions.

The Committee on Nomination was announced as consisting of Drs. D. Hayes Agnew, Wm. T. Briggs, Hunter McGuire, John S. Billings and J. R. Weist.

On motion of Dr. L. McLane Tiffany, the Secretary was requested to wire to Dr. T. G. Richardson, of New Orleans, the senior Vice-President, who was prevented by illness from attending the meeting, the regrets of the Association at his absence.

Dr. David W. Cheever, of Boston, read a paper on

SARCOMA OF THE TONSIL—EXCISION.

The patient, a male, æt. 57, single, for one year had to breathe through the mouth on account of enlargement of the left tonsil. No pain was experienced until November 1, 1888, when he "caught cold" and the tonsil swelled considerably and became sore and tender, and discharged spontaneously a few days later. At the same time he noticed some enlarged glands in the left neck. The glands gradually increased in size. The tonsil caused no more pain but there was an increasing sense of fulness behind it, increasing dysphagia and difficulty in articulation. There was loss of appetite and weight. When he came under observation January 14, 1889, the left tonsil was found to project nearly to the uvula, and was as large as a pullet's egg. There were two glands in the left neck each as large as a horse-chestnut.

The operation was performed January 17, 1889, ether being given, and the patient being in a sitting posture. A gland in front and one behind the sterno-cleido mastoid muscle were removed. The first incision was semi-lunar, concave upwards, marking the boundaries of the digastric triangle. A second incision over the lower jaw at right angles to the middle of the first incision was then made. The right hyoid muscle was now divided and the other tissues pushed to one side. The lower jaw was then sawed in two in front of maseter muscle. The tumor was pressed out by finger in the mouth, and was found to be covered with a delicate capsule. On puncture a soft material exuded. The tumor and capsule were removed without great difficulty. There was no hemorrhage and the facial artery and external jugular veins the only vessels ligatured. The wound in pharynx was not sewed; the jaw was wired, the external wound in skin was wired, the external wound in skin was partially approximated and washed with two per cent. boracic acid solution, and dressed with broacic gauze. The wound was dressed daily. Healing took place rapidly, with no unfavorable symptoms. On the 30th day the wire was removed and the jaw found to be firmly united. Microscopical examination showed the growth to be round cell sarcoma.

April 27, a second operation was performed for a tumor on the same side of the neck. The throat, however, remains healthy. A large glandular mass was removed from anterior carotid triangle. This also proved to be a round cell sarcoma.

Dr. D. Hayes Agnew, of Philadelphia: There are several points of interest in connection with sarcoma of the tonsil. I think that including the case of Dr. Cheever's there are only ten or eleven on record. A second point is the fact of constant recurrence. I believe that there is only one case on record where return has not taken place. In that case the thermo-cautery was employed. Various operations have been employed, enucleation, the écraseur, the galvano-cautery, the thermo-cautery, and the external method first used by Dr. Cheever. The operations when undertaken should be done simply with the view of palliation. The operation from without is confessedly a difficult operation, and while in the hands of experts it probably affords the best opportunity for the removal of all diseased structure, but for the general operater some other method would no doubt be better. I have been much struck with the exposure gained by simply slitting the

cheek in operations on tumors far back in the throat, as far back as the soft palate. This would probably give as good a chance of success as any other plan of procedure.

DR. A. VANDERVEER, of Albany: The first well marked case of sarcoma of the tonsil that has come under my observation was in a man aged 72 years. The tumor had been discovered four months before I saw him. There was a full, round tumor of the tonsil, interfering seriously with deglutition and somewhat with breathing. The patient selected enucleation in preference to the operation from the outside. My intention was to remove all that I could with the tonsilotome cutting from behind forward, then enucleate with a blunt instrument and use the thermo-cautery. After cutting through the capsule the tonsilotome slipped behind the tonsil and it was completely enucleated. I did not apply the thermo-cautery. The patient had no return of the disease for eight months. The growth then reappeared and rapidly increased in size. Two months later the patient was taken with pneumonia and died in a few days.

DR. P. S. CONNER, of Cincinnati: I think that the statements in reference to the infrequency of sarcoma of the tonsil are hardly correct. I know of several unreported cases, two of which came under my own observation. One was in a girl aged 26 years. The disease was so far advanced that I thought no operation justifiable and she died a few days later. The second case was a man aged 40 years. The tumor was as large as the fist. I operated by slitting the cheek and was able to readily separate the tumor from the capsule with the finger. The operation was done in June. In July he was apparently in excellent condition. The disease began to recur in the latter part of August and grew rapidly, and in October he was found dead in bed, supposed to have committed suicide.

DR. M. H. RICHARDSON, of Boston: Sometime ago I removed a sarcoma of the tonsil by external incision. The enucleation was accomplished with ease and without opening the pharynx. A year after the operation there had been no return of the disease. This was two years ago, and as far as I know the patient is still living.

DR. CHEEVER: The operation through the cheek is probably easier and more desirable in some cases, but the operation from the outside leaves less paralysis and less scar. The great dread of these operations opening the upper part of the alimentary canal was formerly the danger of fistula. This has now been proven to be without foundation. I am inclined to think that the use of sutures in the pharynx or œsophagus would be more dangerous than their omission. The object of these operations is to permit the patient to die easier. It is more comfortable to die with an external tumor than with one pressing upon the larynx or throat, causing starvation or choking.

(*To be concluded.*)

FOREIGN CORRESPONDENCE.

LETTER FROM PARIS.

(FROM OUR SPECIAL CORRSPONDENT.)

Hyperthermic Gastric Disorders and their Treatment by Naphthol—Salicylate of Soda as an Antipyretic—The Proscription of Ergot of Rye during the After Stages of Parturition—Maladies of the Organ of Vision produced by Diabetes and the Indications for Operative Measures—The Abortive Treatment of Whitlow.

At a recent meeting of the Clinical Society, Dr. Comby, Hospital Physician, read a note on *Hyperthermic Gastric Disorders and their Treatment by Naphthol*, from which the patients derived the greatest benefit. Following the example of Professor Bouchard, who vaunted this substance in intestinal disorders, Dr. Comby prescribed naphthol B. in doses of 2 grams, 50 centigrams per day. One patient was a young man, aged 21 years, a house painter, and who was formerly subject to lead colic, but had not for some months past been exposed to saturnine intoxication. At the time of his applying for advice he was dyspeptic, had dilatation of the stomach, and had, at the second phalanges of the fingers, in a very marked degree, osseous nodosities, which Professor Bouchard was the first who studied them, and of which he fixed the semiological value. This condition was accompanied by a high body temperature, rising as high as 41.2° C., but the day after the administration of the naphthol the temperature fell to 37.2 C., and only but once rose again, when it marked 38.3° C. In another case of febrile gastric trouble, accompanied with incessant bilious vomiting, the naphthol produced marvelous effects. According to Dr. Comby's experience, naphthol is an inoffensive medicament, and may be employed for some time without any inconvenience, and he can only corroborate the observations of Professor Bouchard, who stated that intestinal antisepsy in general, and antisepsy by naphthol in particular, should be practiced in all these morbid states which, as for instance, gastric disorders, appear to depend on abnormal putrefactions which occur in the digestive tube.

Professor Jaccoud, at a recent clinical lecture, stated that, according to his experience, the best antipyretic, in febrile tuberculosis, is the salicylate of soda. He considers it inadmissible, that in presence of the facts brought out by clinical experience that the sulphate of quinine should still be administered in these cases. The salicylate

of soda should be given at a maximum dose of 2 grams in 24 hours. At a daily dose of 1 gram the medicament may be advantageously continued for a long time, with this precaution that the patient should absorb, after each dose or part of a dose, largely diluted with plain or alcoholized water. The contra-indications of the use of the salicylate of soda are: affections of the kidneys, inflammation of the lungs (for fear of asphyxia), and of the heart.

According to Dr. Blanc, of Lyons, the proscription of the use of the ergot of rye, which is the rule during pregnancy and labor, should be extended to the after stages of parturition, except of course in certain cases. Of ninety-two women, whom the author divided into three categories, he studied the influence of ergotine on uterine regression. The first forty had no ergotine, he simply contented himself with measuring the length of the uterus in the first ten days. Forty women also served for experiment in the second category. To each he administered one gram of ergotine Yvon in subcutaneous injection in the abdominal parietes, for ten days following parturition. In the twelve others the same treatment was employed during ten days. It results from these researches that there was scarcely any appreciable difference in the mensurations of the uterus whether ergotine was or was not employed. Dr. Blanc, therefore, feels authorized to say that involution is better accomplished when there is abstention, and he concludes his note as follows: 1. That ergotine, employed during the first five days, has no influence whatever on the regression of the uterus. 2. That this medicament, employed after parturition, may oppose, in a certain measure, the retraction of the organ. This medicament, already proscribed during pregnancy and during labor, should equally be proscribed during post-partum, except, however, in the case of secondary hemorrhage, where its action is the more sensible the nearer the confinement.

In a note by Dr. Stœber in *The Journal d' Oculistique*, the author examines the maladies of the organ of vision produced by diabetes, and the indications for operative measures. The lesions of the organs of vision produced by diabetes are, he said, of seven species: 1. The anomalies of accommodation and of refraction. 2. Cataracts. 3. Troubles and hemorrhages of the vitreous body. 4. Hemorrhagic retinitis. 5. Atrophy of the optic nerve. 6. Paresis of the extrinsic muscles of the eye. 7. Keratitis more or less grave. In referring to the operative indications the author had particularly in view the operation for cataract. He ranges himself to the opinion of those ophthalmologists who practice extraction, whatever be the quantity of sugar contained in the urine, abstaining from operating only when the state of emaciation and of debility has reached a too high degree.

The author, however, recommends the previous treatment of diabetes, and advises that the operation should be performed only when one had obtained by this treatment a notable dimunition in the quantity of sugar contained in the urine. He recommends all the antiseptic precautions before and after the operation. The surgeon will abstain from all surgical intervention, if there exist at the same time as the cataract, a grave amblyopia, symptomatic hemorrhages of the retina, or atrophy of the optic nerve.

Dr. Gaucher, in writing on the abortive treatment of whitlow, states that, to effect this object, it is sufficient to moisten slightly the painful part and around it with a little water, and to pass over this surface a stick of nitrate of silver. In a few hours after the skin becomes black, all pain disappears and the inflammation is arrested. No dressing is required and the black color disappears in six days. The author relates that in a case of the fit of the gout, the great toe was much swollen and painful to the touch, rather red, and was the seat of lancinating pains which prevented the patient from sleeping. The toe was painted as above described, and the next day it diminished in size, the pain completely disappeared a quarter of an hour after the painting, and the patient got up and attended to his occupation. A. B.

A LETTER FROM MOSCOW.

Artificial Inoculation of Calves.

From "Le Progrès Médicale" of April 27, 1889.

To the Editor in Chief:—At the last session of the Société physico-médicale de Moscow, Dr. A. Voïtoff made a communication of much interest on the *Artificial Vaccination of Calves*. In spite of numerous researches, no one has yet discovered the pathogenic microbe of small-pox. Studying this interesting question and endeavoring to find the specific agent of this disease, M. Voïtoff has found in the contents of variolous pustules the presence of some species of microörganisms which are already known and described. Inoculations of calves with cultures of each one of these microbes gave no results. M. Voïtoff employed an injection of a mixture of the cultures with satisfactory results. Animals vaccinated in this way presented characteristic variolous pustules. (A vaccinated calf was shown to the Society.) The reinjection from this first animal of others has always produced variola. Experiments with genuine variolic lymph show that animals vaccinated with the artificial lymph had entire immunity from the disease. It was remarked that at the fourth generation the artificial lymph began to lose its virulence. The members of our Society for the most part admit that the observations of

M. Voïtoff merit a position among the great discoveries.

This study proves in fact that an infectious disease may be excited not only by one pathogenic microörganism, but also by the simultaneous presence in the organism (by symbiosis) of microbes which taken alone would be harmless. Besides this, artificial vaccination, now possible after the methods of M. Voïtoff, would free us from all danger of the introduction of the virus of other diseases, as syphilis, tuberculosis, etc.

S. VERMEL.

Moscow, April 10, 1889.

As the above letter seemed of much interest I have translated it for THE JOURNAL.

THOS. M. FLANDRAU, M.D.

Rome, N. Y., May 15, 1889.

DOMESTIC CORRESPONDENCE.

Etiology of Pulmonary Phthisis.

Dear Sir:—Referring to your kind review (on pages 629 and 630) of my paper, read before the Section on Climatology, etc., International Medical Congress, it does seem *possible*, as you suggest, that those deaths from phthisis which are controlled by the atmospheric temperature are the cases of chronic pneumonia "catarrhal phthisis," and it may not be practicable to prove or disprove this assumption until after distinctions between that disease and tubercular phthisis are made in mortality reports; yet we have strong evidence bearing upon the subject, as follows: My tables and diagrams show positively that scarlet fever and small-pox are quantitatively controlled by the atmospheric temperature; and there can be little, if any, doubt that this is because the specific contagia of these diseases find easiest entrances, by way of the air-passages, when the exudative inflammations in the air-passages are most prevalent, that is, during the coldest weather; at such times, then, inoculation with the specific contagia of these diseases occurs, and, in susceptible persons, these diseases are thus caused. We have reason to believe that, just as the inoculation with the specific contagia of scarlet fever and small-pox occurs most when the air-passages are most irritated, so inoculation with any other contagium which can enter by way of the air-passages will occur when the air-passages are most irritated; and it is proved by my tables and diagrams that this is in the coldest weather. It is known that the *bacillus tuberculosis* is present in the dust of rooms inhabited by consumptives where the sputa are not carefully collected in cups or spittoons. And, although the bacilli are not in the air expired by consumptives, there can be little doubt that the bacillus is frequently present in the dust of public halls, on the floors of which sputa may be dried. It is now well known that inoculation with the *bacillus tuberculosis* causes tuberculosis in susceptible persons and animals. That the *deaths* reported from phthisis pulmonalis are controlled, as they are to some extent, by the atmospheric temperature, seems to me to be because in some cases the deaths follow within a few months of the inoculation, which in some cases is, as I believe, by the inhalation of the bacillus, and, in some cases, by the exudation and rapid multiplication of bacilli in the inflammatory exudates (in the lungs and air-passages), caused by the inhalation of cold dry air, and thus deaths from phthisis *pulmonalis* result to persons who have previously had tuberculous disease in some part of the body. But, that a larger proportion of the *sickness* from consumption is not, apparently, controlled by the atmospheric temperature, seems to me to be because of the long and extremely variable duration of the disease after first inoculation with it, coupled with the fact that the reports of sickness include old cases as well as new cases. If the sickness could be learned so as to include in the report only the new cases taken sick, I think a very large proportion of all the cases would be found to be quantitatively related to the atmospheric temperature, just as is found true for scarlet fever and small-pox, in which diseases only cases recently taken sick can be included.

With deference to the author of the editorial, I respectfully submit that if it is a fact "that the highest ratio of phthisis to the population is in the North-Eastern and Middle States;" that fact is not evidence that the climatic causes of phthisis are most present in the Middle and North-Eastern States; on the contrary, they may be least present there, because the death-rate from phthisis increases so rapidly with the age of inhabitants, over the age of fifty years.[1] So that a comparison of the total death-rates from phthisis at all ages in different localities may supply a hint as to the average age of the inhabitants, but cannot supply evidence of the comparative healthfulness of the localities, unless it is shown that the ages of the inhabitants in the several localities are the same, and then it cannot, unless it is shown that in these populations the proportion of the sexes at the different ages are the same. Even then, the evidence from comparisons of places has little value, unless it is shown that the occupations and character of the inhabitants are the same, because phthisis is less fatal among the well-to-do who are not in certain dangerous occupations, and it is lessened, as stated in the editorial, by drainage and by sanitary conditions. I submit that nothing has been established as to the geographical distribution of phthisis, which is important that my facts or my "explana-

[1] Vital Statistics of Michigan, 1870, pages 314-315.

tion be reconciled with," except the fact, referred to in the editorial as having been established by Dr. Henry I. Bowditch, in this country, and by Dr. Buchanan, in England, that residence over low, undrained soil is conducive to phthisis. But it is an error to suppose that the facts which I have presented are not in harmony with those presented by Drs. Bowditch and Buchanan. They are all in harmony, and are easily reconciled, as I shall try to point out in a paper to be read before the Section on State Medicine at the coming meeting of the Association, at Newport, R. I.

If "the highest ratio of pneumonia is on the lower part of the Atlantic slope between the Delaware and Savannah, etc., the explanation may be similar to that just suggested as to phthisis, the mortality from pneumonia is much greater at some ages than at others, it is especially great among children, and, in adults, more among males than among females, therefore comparisons of localities teach us little unless a great many facts besides the total death-rates are given, and such facts have not yet been supplied.

The answer to the last sentence in the editorial (page 630), is of considerable interest, because it is "new to science." If one will study carefully the diagram, graphically representing the facts exhibited in the tables in my article reviewed in THE JOURNAL, it will be seen that it is certainly proved not only that the prevalence of such diseases as influenza, croup, scarlet fever and small-pox, is controlled by the temperature, that the times of maximum and minimum prevalence of each specified disease follow the times of greatest and least cold, but that the disease is later than the exposure to cold by a time equal to the average duration of the disease, and the period of incubation, if it have one. Thus, the maximum sickness from such an acute disease as croup (Diagram 13) is in the same month as is the greatest exposure to cold atmosphere, and the least sickness is in the month of least cold, the most sickness from scarlet fever and from pneumonia is a month later, and the least sickness from each disease is a month later, while the changes in the deaths from small-pox and from phthisis (Diagrams 9 and 10) follow (in most months of the year) about two or three months later than the atmospheric temperature changes. Deaths from small-pox should be expected to follow, and they seem to follow, as long a time later than the temperature changes as is the average duration of the fatal cases, plus the average period of incubation. Similar remarks may be made of phthisis pulmonalis; probably because, whether the tubercular disease of the lung is incited by bacilli inhaled into the lungs, or by bacilli which reach the lungs through the blood from some other part of the body of a tuberculous person, the irritations and exudations, which enable the bacillus to reproduce rapidly in the lungs, and make it possible for this disease to cause deaths from *pulmonary* disease, seem unmistakably to follow the exposure to inhalation of cold atmospheres, considerable portions (about one-sixth) of both the sickness and the deaths from pulmonary consumption follow about two or three months after the changes in the temperature of the atmosphere; that the proportions which are apparently controlled by the atmospheric temperature is, as I believe, owing to the long and variable duration of the disease, as I have already explained.

Thus far no one has collected and published very many facts concerning the first onset of phthisis pulmonalis, and has studied those facts in their relations to the inhalation of cold dry air, and in relation to the inhalation of dust containing the *bacillus tuberculosis;* but I submit that the facts which I have published, taken in connection with what is the common property of the profession, make it extremely probable that the causation of pulmonary phthisis is thus to be explained.

Very respectfully,

HENRY B. BAKER.

Lansing, Mich., May 11, 1889.

MISCELLANY.

THE MITCHELL (IND.) DISTRICT MEDICAL SOCIETY will meet at West Baden, Ind., Thursday and Friday, June 13 and 14, 1889. Papers of interest to the entire profession will be presented at the meeting. Reduced rates on railroads have been secured. Special hotel rates.

THE CHAMPAIGN COUNTY MEDICAL SOCIETY met May 5th, at Mosgrove Lodge Hall, Urbana, Ohio, with a large number of members and visitors present. After the examination and discussion of several clinical cases presented by members of the Society, Prof. D. N. Kinsman, of the Columbus Medical College, Columbus, Ohio, who was present by invitation, was introduced by the President, and delivered a very able and instructive discourse on the subject of *Microbes*. The lecture was listened to with great interest by all present. Dr. Kinsman was unanimously tendered a vote of thanks by the Society, and invited to return again at some future time and continue the subject.

THE German Government has not only refused to open fresh schools of medicine, but the *Landtag* has refused the subsidies formerly accorded to certain professorial chairs at Halle and Marlburg.—*The Practitioner.*

LETTERS RECEIVED.

Dr. W. Elliot, Verona, Ill.; Dr. W. H. Lyford, Port Byron, Ill.; C. H. Bryant, Dr. W. H. Wathen, Louisville, Ky.; Mrs. R. J. Keith, Peoria, Ill.; Dr. J. S. B. Alleyne, St. Louis, Mo.; Dr. H. von Rucke, Asheville, N. C.; Dr. G. B. Little, Burlington, Ia.; Dr. E. H. Dudley, Janesville, Wis.; J. G. Jowers, Smith's Fork, Tenn.; Enos McCormick, Hartford, O.; Dr. Henry Gibbons, San Francisco, Dr. A. P. Grinnell, Burlington, Vt.; Dr. Chas. C. Browning, Adrian, Ill.; J. Astier, Paris, France; A. E. Walesby, Louisville, Ky.; H. N. Rowell, San Francisco; Dr. E. Pynchon, Chicago; Dr. Willis G. Tucker, Albany, N. Y.,

Dr. A. B. Carpenter, Cleveland, O.; J. H. Peele, Louisville, Ky.; Dr. Wm. Osler, Philadelphia; Thos. Leeming & Co., J. H. Bates, Dr. Fred. King, New York; Dr. Samuel N. Nelson, Boston; Dr. Geo. W. Burton, Mitchell, Ind.; L. F. Bishop, New York; S. J. Alkier, Burlington, Vermont.

THE honorary degree of Doctor of Laws has been conferred by the Senatus Academicus, Edinburgh University, on Dr. Richard Quain, of London.

Official List of Changes in the Stations and Duties of Officers Serving in the Medical Department, U. S. Army, from May 11, 1889, to May 18, 1889.

By direction of the acting Secretary of War, a board of medical officers, to consist of Lieut.-Col. Anthony Heger, Surgeon, Capt. F. C. Ainsworth, Asst. Surgeon, and Capt. John O. Skinner, Asst. Surgeon, will assemble at the U. S. Military Academy, West Point, N. Y., on June 1, 1889, to examine into the physical qualifications of candidates for admission, and members of the graduating class. Par. 9, S. O. 108, A. G. O., May 10, 1889.

By direction of the acting Secretary of War, the following named officers are detailed to represent the Medical Department of the Army at the annual meeting of the American Medical Association to be held at Newport, R. I., on June 25, 1889: Major Samuel M. Horton, Major John S. Billings and Major Charles Smart, Surgeons U. S. Army. Par. 15, S. O. 110, A. G. O., May 13, 1889.

By direction of the acting Secretary of War, the ordinary leave of absence granted Capt. William B. Davis, Asst. Surgeon, in S. O. 232, October 5, 1888, from this office, is extended six months on surgeon's certificate of disability. Par. 20, S. O. 180, A. G. O., May 10, 1889.

By direction of the acting Secretary of War, leave of absence for six months, on surgeon's certificate of disability, is granted Capt. R. G. Ebert and Capt. E. B. Moseley, Asst. Surgeons U. S. Army. Pars. 5 and 6, S. O. 109, A. G. O., May 11, 1889.

By direction of the acting Secretary of War, Capt. Louis S. Tesson, Asst. Surgeon U. S. Army, is relieved from duty at Watervliet Arsenal, N. Y., and ordered to Ft. Sidney, Neb. Par. 9, S. O. 107, A. G. O., May 11, 1889.

Capt. William C. Gorgas, Asst. Surgeon, now on duty at Ft. Barrancas, Fla., will report in person to the commanding General, Dept. of the Missouri, for temporary duty with troops in the field. Par. 1, S. O. 112, A. G. O., Washington, May 15, 1889.

Capt. Wm. C. Gorgas, Asst. Surgeon U. S. Army, ordered to proceed at once and to report to the commanding General Dept. of the Missouri for temporary duty in the field.

Capt. Wm. C. Gorgas, Asst. Surgeon U. S. Army, will accompany the command from Ft. Barrancas, Fla., and proceed with battery H., Second Artillery, to Ft. Adams, R. I., and to return to his proper station on completion of this duty. Par. 5, S. O. 108, Hdqrs. Div. of the Atlantic, Governor's Island, New York City, May 13, 1889.

First Lieut. Jefferson R. Kean, Asst. Surgeon U. S. Army (Ft. Robinson, Neb.), is hereby granted leave of absence for one month, to take effect between the 1st and the 15th of June, 1889, with permission to apply at Hdqrs. Div. of the Missouri for an extension of fifteen days. Par. 2, S. O. 48, Hdqrs. Dept. of the Platte, May 13, 1889.

Official List of Changes in the Medical Corps of the U. S. Navy for the Week Ending May 18, 1889.

P. A. Surgeon Robert Whiting, ordered to the receiving ship "Minnesota."

Surgeon G. E. H. Harmon, detached from the Naval Academy and to the "Constellation."

Asst. Surgeon C. W. F. Lowndes, detached from Naval Academy and to the "Constellation."

Asst. Surgeon W. F. Arnold, detached from the "New Hampshire" and to the "Pinta."

P. A. Surgeon C. W. Rush, detached from the "Pinta," proceed home and wait orders.

Surgeon W. A. McClurg, ordered to the Bureau of Medicine and Surgery.

Asst. Surgeon E. R. Stitt, detached from Bureau Medicine and Surgery, and to the "New Hampshire."

Surgeon H. C. Eckstein, ordered to the Marine Rendezvous, Philadelphia, Pa.

Medical Director M. Bradley, detached from Marine Rendezvous, Philadelphia, Pa., and continue on special duty at Philadelphia.

Surgeon M. L. Ruth, granted another year's leave.

Official List of Changes of Stations and Duties of Medical Officers of the U. S. Marine-Hospital Service, for the Four Weeks Ending May 11, 1889.

Surgeon George Purviance, detailed as chairman of Board for the physical examination of candidates for appointment as cadets, Revenue Marine Service. May 3, 1889. Detailed as chairman of Board for the physical examination of officers, Revenue Marine Service. May 11, 1889.

Surgeon Fairfax Irwin, to proceed to Bath, Wiscasset, Rockland, Belfast, Bangor, Ellsworth, Machias, and Eastport, Me., as inspector. April 22, 1889.

P. A. Surgeon F. W. Meade, detailed as recorder of Board for the physical examination of candidates for appointment as cadets, Revenue Marine Service. May 3, 1889. Detailed as recorder of Board for the physical examination of officers, Revenue Marine Service. May 11, 1889.

P. A. Surgeon W. A. Wheeler, granted leave of absence for thirty days. April 16, 1889.

P. A. Surgeon W. D. Bratton, relieved from duty at San Francisco, Cal.; to assume charge of the Service at Portland, Ore. May 8, 1889.

Asst. Surgeon G. M. Magruder, to proceed to Baltimore, Me., for duty. May 8, 1889.

Asst. Surgeon T. B. Perry, when relieved at Portland, Ore., to proceed to San Francisco, Cal., and await orders. May 8, 1889. To report to the commanding officer, revenue str. "Rush," for special duty. May 11, 1889.

Asst. Surgeon A. W. Condict, when relieved from duty at Boston, Mass., to await orders. May 8, 1889. To report to the commanding officer, revenue str. "Chase," for special duty. May 11, 1889.

Asst. Surgeon S. H. Hussey, when relieved from duty at Baltimore, Md., to proceed to Boston, Mass., for duty. May 8, 1889.

Asst. Surgeon H. D. Geddings, to proceed to Baltimore, Md., for temporary duty. May 8, 1889.

STATE MEDICAL ASSOCIATION MEETINGS IN 1889.

STATE.	SECRETARY'S NAME AND ADDRESS.	TIME AND PLACE.
Arkansas.	L. P. Gibson, Little Rock.	Pine Bluff, May 28.
Colorado.	H. W. McLauthlin, Denver.	Denver, June 18.
Dakota.	H. E. McNutt, Aberdeen.	Mitchell, June 20.
Delaware.	J. E. Ellegood, Laurel.	Dover, June 11.
Maine.	C. D. Smith, Portland.	Portland, June 11.
Massachusetts.	F. W. Goss, Boston.	Boston, June 11.
Minnesota.	C. B. Wetherle, St. Paul.	Minneapolis, June 20.
N. Hampshire.	G. P. Conn, Concord.	Concord, June 18.
New Jersey.	Wm. Pierson, Orange.	Spring Lake, June 4.
New York.	E. D. Ferguson, Troy.	New York, Sept. 25.
Oregon.	C. C. Strong, Portland.	Portland, June 11.
Pennsylvania.	W. B. Atkinson, Philadelphia.	Pittsburgh, June 4.
Rhode Island.	G. D. Hershey, Providence.	Providence, June 13.
Vermont.	D. C. Hawley, Burlington.	Brattleboro, June 27. Burlington, Oct. 10.
Virginia.	L. B. Edwards, Richmond.	Roanoke, Aug. or Sept.
West Virginia.	J. L. Fullerton, Charlestown.	W. Sulphur Springs.